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Original Articles

THE DIAGNOSIS OF FRACTURE OF HIP.

BY GEORGE W. GAY, M.D., BOSTON.

AN old person falls down and cannot get up by reason of an injury to the hip. What has happened? In the vast majority of instances the hip is broken. So constantly does this lesion exist under these conditions, that a tentative diagnosis to this effect is justifiable. The diagnosis of sprain, contusion or dislocation has no standing under these circumstances. Loss of function is a leading factor in hip fractures. The cases of fracture of the hip in old people in which they can stand or walk are too rare to invalidate the rule, as stated above. Such cases are surgical curiosities, very seldom seen and require little attention.

The three cardinal symptoms of fracture of the hip are loss of function, eversion of foot and severe pain on motion. Practically these symptoms are always present in these injuries and can be detected readily even by those who may not be familiar with these cases.

The loss of function is usually complete. Occasionally a person with this lesion can rotate the limb slightly, or even raise it from the bed. The older the victim the less likely is he able to do these things. A broken hip is deprived of its functions, as a rule, whatever may be the age or condition of the patient.

A person with a hip fracture lying upon his back, presents a clinical picture that is characteristic. The limb is somewhat flexed and the foot is everted more than its fellow, not infrequently resting upon its outer surface. The only other injury to the hip that presents this clinical picture is a forward dislocation, an injury so rare that few surgeons have seen a case.

Extreme pain attended by muscular spasm is always in evidence in the manipulation of broken hips. It prevents any extensive manipulations, nor are they usually necessary, as the diagnosis can be made reasonably clear by other means. Anesthetics are seldom required in these examinations. Without them, there is less danger of disturbing the impaction that may be present and may be so desirable to preserve.

Given these three symptoms,—disability, eversion of foot and pain on manipulation,—the diagnosis is reasonably certain in all injuries to the hip. The older the victims, the more reliance can be placed upon them.

Shortening of the injured limb is almost always present, but it is less readily determined than are the above mentioned cardinal symptoms. "Slight shortening," that is, not exceeding half an inch, is not always detected, especially in stout persons. In some cases only an expert can detect any difference in the length of the limbs. Moreover, it is claimed by authorities that, in the absence of an injury, in not a few instances there is an appreciable difference in the length of the lower limbs. While unmistakable shortening is a valuable symptom of fracture of the hip, yet it is not as readily detected as are other conditions.

Crepitus is usually absent in impacted fractures, depending, of course, upon the degree of inpaction. This symptom is not to be sought too curiously. The manipulations should be gentle and intelligent. The diagnosis can be made satisfactorily without this symptom.

Other comparative symptoms of hip fractures are Nélaton's and Bryant's lines, designed to show the relative elevations of the top of the great trochanters upon the two sides. The comparative tension of the fascia lata above the trochanters is also a sign of some significance.

Not infrequently a fracture of the hip is diagnosed as a dislocation (Cotton). This diagnosis has no standing in the aged, when it is remembered that their hips are broken much more readily than dislocated. The neck of the femur is too brittle to stand the force necessary to produce a dislocation. The latter injury is occasionally met with in the young and the middle aged, but not in old people. About fifty fractures of the hip and three dislocations are admitted to the Boston City Hospital annually. At the Massachusetts General Hospital the same number of dislocations of the hip are received, but only about one-fifth as many fractures as mentioned above.

Furthermore, the only dislocation of the hip that presents the same, or a similar clinical picture as a fracture, is the displacement forward. This dislocation is so extremely uncommon that most physicians have never seen a case. Even Dr. Bigelow, with his large experience, never saw a dislocation upon the pubes. A young man was admitted to the City Hospital many years ago with this injury, under the writer's care. It was reduced without much difficulty and the results were satisfactory.

The most common errors in diagnosis in hip injuries are in calling them sprains and contusions. For many years the writer was in the habit of saying to his internes and other medical students that there are no such disabling injuries as sprains or contusions of the hip. This is not strictly true, of course, but not infrequently mistakes might have been avoided, had this rule been observed.

The time has come when it is neither wise nor quite safe to diagnose fractures without the aid of the x-ray. This is especially true in all cases liable to appear in court. It goes without saying that in many cases no such examination is necessary, and in many other instances, for obvious reasons, it is neither feasible nor possible to secure one.

Loss of function; eversion of foot; severe pain on motion; these are the cardinal symptoms of hip fractures. The older the patient, the more reliance may be placed upon them. This brief paper may well close as it began: If an old person falls down and cannot get up by reason of an injury to the hip, that hip is broken, in the vast majority of cases.

* * *

OBSTRUCTION OF THE SMALL INTESTINE.*

BY JOHN T. BOTTOMLEY, M.D., BOSTON.

THOUGH my remarks will have to do with obstruction of the jejuno-ileum only, yet they must, to a certain degree, deal with the subject of intestinal obstruction in general, since it is evident that a discussion of obstruction limited to a certain part of the intestinal tract is not possible without a more or less general examination into the matter as a whole. No attempt will be made even to discuss the limited phase of the subject in an exhaustive way. Attention will be called, however, to some interesting phases having to do in particular with the small intestine which, by the way, is said to be involved in 90 per cent. of all cases of ileus.

Ileus is a name or term used to designate as a whole that group of symptoms (colicky pain, constipation or obstipation, distention of the intestine, nausea and vomiting) which indicate the existence of an intestinal obstruction. It is not a disease, not a pathologic entity; it is the expression of a pathologic condition which may vary in degree as it does in its causes. Intestinal obstruction is something with which every surgeon has to deal. Its successful treatment depends to a very great extent on the promptness with which the proper remedial measures are applied.

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* Presented at the meeting of the New Hampshire State Medical Society, May, 1918.

At the very outset, it should be thoroughly appreciated that absolute accuracy of diagnosis as to the cause of the obstruction and its exact situation is not essential. The more fundamentally important feature is the realization of the fact that an obstruction exists. De Quervain expresses it well, when he writes, "Our main object must be to recognize when surgical relief should be afforded, although we may not always know the precise position and character of the obstruction." Careful and repeated examinations are by no means to be discouraged but prolonged waiting for the purpose of absolute certainty of diagnosis while irreparable damage is being done to the patient is strongly to be disapproved. Any acute illness characterized by severe abdominal pain, persistent nausea and some degree of shock or collapse and unaccompanied by diarrhea is sufficiently suggestive of intestinal obstruction to warrant operative investigation.

Ileus may be acute or chronic depending upon the completeness, suddenness and permanency of the obstruction. The chronic variety is, of course, for a varying length of time, the expression of an incomplete obstruction which under certain conditions may suddenly become complete; the symptoms of acute ileus then supervene; this acute stage may be only temporary (intermittent ileus) or it may be permanent and fatal unless relieved by operation or other procedure. Practically, however, there are to be considered only two main groups of cases:

(1) Those with complete obstruction (acute ileus).

(2) Those with incomplete obstruction (chronic ileus).

Symptoms. The principal symptom and the one which usually appears first is a sharp pain in the abdomen, diffuse, colicky in character and of sudden onset; it is a severe pain which soon disappears only to appear again with increased intensity; it comes and goes with free intervals; there is little or no tenderness; eructation of gas begins; the patient becomes anxious and the anxiety is shown in the features; during the colic a cold sweat breaks out; vomiting starts and continues; all food or drink taken is quickly ejected; the vomiting may not be violent but it is *persistent* and uncontrollable; sometimes *early in the course* visible peristalsis, though far more common and more marked in incomplete obstruction, may be present and a coil of distended intestine may be seen or may be felt to stiffen under the palpating hand, appearing as an area of increased resistance and giving out a hollow note on percussion; the distention may be entirely local at first but in a few hours it grows more general and the abdomen becomes tense; enemata may at first bring away some fecal matter and perhaps a little gas from the bowel but that happens only very early in the attack and they soon have absolutely no effect; examination thereafter shows an empty rectum; there is little or no rise of temperature and the pulse in the early stages is but little disturbed except during the spasm of colic. Unless relief is afforded, the pain after a time gradually ceases but the distention persists and increases, the vomiting continues; the vomitus, consisting at first of the stomach contents and then of mucus and bile, finally becomes foul smelling, dark colored and stercoraceous; the features become pinched and sunken, the face pale and slightly cyanotic; the tensely distended abdomen is somewhat purplish and absolutely immobile; the pulse is of low tension and of rapidly increasing rate, the respiration becomes rapid and shallow, the extremities become cold and the toxemic patient soon goes on to death.

A variety of acute ileus is the so-called *Strangulation Ileus,* in which not only is there obstruction of the fecal current but also interference with the blood supply and nutrition of the intestinal wall, which quickly leads to gangrene, necrosis and early death; this variety is always accompanied by shock, the severity of which is in direct proportion to the vascular involvement in the obstruction. Strangulation ileus is far more dangerous, more quickly fatal and demands more prompt recognition and treatment than simple *Mechanical* (*Obturation*) *Ileus,* in which obstruction to the passage of the fecal current is the only threatening factor and which a patient can endure with relative safety for a much longer time. The occlusion of a loop of intestine in a hernia, either external or internal, or its tight constriction beneath an adhesive band are the most frequent causes of strangulation ileus.

In uncomplicated obturation ileus the symptoms are, as a rule, of gradual onset, and local damage to the bowel wall is usually little. It is the form seen in obstruction from gall-stones or other foreign bodies, tumors in the lumen, or tumors originating in other organs and exerting pressure on the intestine.

Acute obstruction involves the small intestine far more frequently than the large. As far as distinguishing symptoms are concerned, in obstruction of the small bowel the pain is more often referred to the region of the umbilicus; the cecum and colon are not ballooned up and the distention is more likely to be central than in the flanks; if the obstruction is very high, the amount of distention may be negligible; in fact, pain, coprostasis and persistent copious vomiting with a flat abdomen indicate obstruction high in the small intestine; vomiting is an earlier symptom and becomes stercoraceous more quickly; the patient fails more rapidly and the collapse is more speedy; suppression of urine is more marked and appears earlier; indican is present in the urine; visible peristalsis and stiffening of the coils are far more common. As the seat of the obstruction approaches the large intestine, the distinguishing signs between obstruction in the latter and in the small intestine are no longer present and a diagnosis cannot be made clinically. The chief causes of acute obstruction of the small intestine are adhesive bands, volvulus, intussusception, tuberculosis, cancer and hernia.

I shall not refer in particular to the symptoms peculiar to each of these conditions.

Differential Diagnosis. The more common conditions from which acute obstruction must be distinguished are:

General or Spreading Peritonitis. The diagnosis may be difficult after the second day because the symptoms of both conditions are then very similar. A history pointing to some acute abdominal affection (appendicitis) ushering in the illness is strongly indicative of peritonitis. The pain is more marked in peritonitis and more continuous, the distention is more general and the abdomen more tense; the peritonitic abdomen is immobile and noiseless; visible peristalsis is never present. Early in the course of peritonitis the vomiting is less persistent. According to Eisendrath, the increase in the pulse-rate is more gradual and steady in peritonitis and there is almost always a rise of temperature. De Quervain lays much stress on the information to be gained from abdominal auscultation. Dead silence in an evenly distended abdomen is a probable indication of peritonitis; on the other hand, gurgling or metallic sounds heard in one locality in an unevenly distended abdomen point strongly to ileus. Wilms, too, notes the significance of metallic ringing sounds as an early sign of ileus. Careful and repeated auscultation and percussion of the abdomen should never be neglected.

Acute Perforation of a Gastric or Duodenal Ulcer. The history and character of previous digestive troubles are of valuable diagnostic aid and in doubtful cases should be looked into. The initiative pain is sudden, severe, prostrating and the patient is pallid, has a cold sweat and is evidently in collapse. The pain is usually constant and its spread, like that of the dulness and spasm, is along the right costal border into the right flank and thence into the right iliac region. There are usually no periods of relief from the pain. The tense, board-like abdominal wall is very characteristic.

Acute Pancreatic Disease. This is almost always seen in obese subjects and a preceding history indicating gall-bladder trouble is common. The collapse is more prompt, the pain is distinctly in the epigastric region and is frightfully severe; the face takes on the peritonitic aspect but is usually distinctly cyanotic, the meteorism is less general. The diagnosis cannot always be made without operation. After the peritoneum has been opened, the presence of the white or yellowish-white areas in the omentum will indicate the diagnosis.

Acute Cholecystitis. The location of the pain, the tenderness and the spasm are characteristic. There is usually a considerable rise in temperature and, as a rule, a tumor develops very rapidly in the gall-bladder region. A history of previous attacks of trouble in the upper right quadrant is common.

Ruptured Tubal Pregnancy. The menstrual history should be illuminating. In addition to that, the story of a sharp, sudden, stabbing pain in the lower abdomen with the accompanying faintness and pallor should prevent error. Never fail to make a vaginal examination in all doubtful cases.

Tabetic Crises. The Argyll-Robertson pupil, the Romberg symptom and the absence of the knee-jerk and other reflexes should put us on the right road. Yet the diagnosis may be most difficult, because a paralytic ileus may exist as a manifestation of the tabes or a true mechanical obstruction may exist in a tabetic.

Torsion of Pedicle of Ovarian Cyst. The pelvic examination and palpation of the tumor should make the diagnosis easy in the early stages; in the late stages, when the abdomen is distended and satisfactory palpation is difficult, the call for operation is so insistent that an exploratory laparotomy will settle the question. Usually after an anaesthetic has been given, an ovarian tumor is easily felt.

Acute Appendicitis Sometimes Simulates Acute Ileus. In my experience I have found this particularly true in patients over fifty. It is usually to be distinguished, however, by the presence of temperature and by the localization of the tenderness, spasm and pain. Leucocytosis is far more common in acute appendicitis. A rectal examination may prove of great value.

Thrombosis or Embolism of the Mesenteric Vessels. The diagnosis is difficult and often impossible. The symptoms of thrombosis or embolism and those of acute ileus are usually so alarming that surgical intervention is demanded in either case and hence the need of accurate diagnosis is not great. Thrombosis and embolism usually occur after fifty; in the hemorrhagic form the presence of blood in the stools may give us a clue but that may not appear for some days.

Renal Colic. The locality and the radiation of the pain, its distinct limitation to one side, the finding of microscopic blood in the urine, the presence of the Murphy sign, *i.e.* the demonstration of tenderness by fist percussion over the posterior aspect of the lower ribs on the affected side, and the roentgenologic findings are fairly characteristic of this condition and are of fairly constant occurrence. There are usually few or no signs of collapse at the beginning of an attack of renal or ureteral colic.

An immediate diagnosis is not a necessity but a reasonably prompt diagnosis is a necessity. Repeated careful examinations in the course of a few hours are advisable in doubtful cases and almost always succeed in establishing the diagnosis without a loss of time sufficient to be harmful.

The most common causes of acute obstruction of the small intestine are adhesive bands and kinks, strangulation in an internal or external hernia, intussusception, gall-stones and volvulus. Obstruction by round-worms has been known to occur but it is very uncommon. Spastic ileus is acute but it is a rare condition and is not recognized except through operation.

The mortality of acute ileus even treated surgically is very high—40 to 50 per cent. Unfortunately, relieving the obstruction does not always save the patient's life.

Incomplete Obstruction—(*Chronic Ileus*). This may be and often is the forerunner of an acute ileus. The clinical picture is not so well defined; in fact, a very considerable degree of obstruction may exist in the small intestine without giving rise to symptoms sufficiently appreciable by the patient to cause him to seek relief. The fluidity of the contents of the small intestine makes this possible. It may well be the symptoms of the causal condition (as, for instance, the unexplained wasting in cancer) rather than the obstructive symptoms themselves that give anxiety to the patient. A vague abdominal discomfort is often the only early symptom.

As the condition of obstruction develops, however, a definite group of symptoms come well into the foreground:

1. Attacks of *Colicky Pain* at first followed and relieved by the passage of gas or of liquid feces. The pain may not be very severe in the early stages but as the condition progresses the pain becomes intense during the attacks and the patient rolls, tosses, sweats and often cries out in his agony. Yet, as a matter of early diagnosis, it is not so much the colicky pain in itself that is suspicious but, as de Quervain points out, it is its constant recurrence and its practical confinement to a single locality as well as its final association with

2. Abnormal local distention (relaxation) and stiffening (contraction) of a coil or coils of intestine and a visible and palpable powerful *Intestinal Peristalsis*—not the slowly progressing, rather widely diffused, almost impalpable, normal vermicular movements of the healthy intestine which are visible in thin persons, but relatively rapidly moving, heaving waves of intense, stiff, cylindrical coils which travel in the direction of and usually cease at

a point approximate to the situation of the obstruction.

3. The presence of gurgling, metallic sounds in the abdomen which are so often heard by the unaided ear and are frequently noticed and located by the patient himself.

The presence of this symptom is entirely sufficient to warrant a diagnosis of chronic ileus and of itself justifies the urging of operation for the removal of the cause. Other symptoms are of secondary importance and indicate only an advancing process.

Scheme

- Ileus
  - 1. Adynamic ileus (paralytic). Symptomatic intestinal obstruction.
    - 1. Operation on mesentery
    - 2. Prolonged strangulation
    - 3. Spinal paralysis from trauma, pathologic lesions, etc.
    - 4. Afferent nerve lesions
    - 5. Reflex ....
      - 1. Strangulation of omentum
      - 2. Hepatic calculus, colic
      - 3. Renal calculus, colic
      - 4. Torsion of tumor pedicle to degree of strangulation
      - 5. Diaphragmatic pleurisy
      - 6. Acute intoxications (typhoid, pneumonia, etc.)
    - 6. Septic ....
      - 1. Local peritonitis
      - 2. General peritonitis
      - 3. Embolism (mesenteric)
    - 7. Uremic
    - 8. Tabetic crises
    - 9. Acute pancreatic disease
  - 2. Dynamic ileus. (Excessive muscular action)
    - 1. Spastic, without known cause
    - 2. Lead poisoning, chronic
      Tyrotoxicon poisoning
  - 3. Mechanical ileus, from intestinal obstruction.
    - External hernia ..
      - Inguinal
      - Femoral
      - Umbilical
      - Ventral
      - Lumbar
    - Internal
      - Strangulation
        - Peritoneal and subperitoneal pockets
        - Diaphragmatic hernia
        - Inguinal hernia (internal ring)
        - Umbilical hernia
        - Diverticula
        - Adhesive bands
        - Volvulus
        - Intussusception
      - Obturation
        - Neoplasms
          - Internal
          - External
        - Cicatricial contraction
        - Fecal impaction
        - Foreign bodies (enterolith, round worms)
        - Congenital stenosis

It is in this variety of obstruction in the small intestine that fluoroscopic and skiagraphic methods (if carried out by experts) of diagnosis are of particular aid in disclosing the location and sometimes the character of the lesion.

Meteorism is seldom present to any great extent and it may be entirely absent. When present to any marked degree, it usually signifies the development of a complete obstruction. Constipation may not be a noteworthy symptom. Occasionally diarrhea and constipation alternate. There is nothing noteworthy about the stools. Vomiting and nausea as early symptoms are unimportant and are uncommon in incomplete obstruction. They are always present during the attacks of colic but are then reflex to the pain. Later, however, as the obstruction becomes more marked, they may be expressions of the obstruction itself. There is rarely any rise of temperature and at first no change in the pulse rate.

Chronic obstruction may last months and even years without becoming complete. The acute attacks of colicky pain, visible peristalsis, etc., often quiet down and may not reappear until some indiscretion in diet or mode of living causes them to recur. Eventually, as a rule, complete obstruction develops; the symptoms of acute ileus then dominate the picture and demand speedy attention. There is, as a rule, no excuse for allowing the patient to reach this stage, unless, as may happen in rare instances, the attack of acute ileus is the first noteworthy sign of the chronic obstruction.

The most common causes of chronic obstruction are strictures (tuberculous, malignant, etc.), chronic intussusception and an adhesion of a loop of small intestine to some fixed organ with a gradual decrease in the calibre of the lumen.

Both acute and chronic ileus may have varied causes and may consequently present varied phases of degree and character. This has naturally led to different classifications based on this or that factor in the cause of the ileus or in its expression. I regard John B. Murphy's classification as so comprehensive and so practical clinically that I shall make use of it here in about the same form as he has presented it.

That a clinical distinction between the various varieties is most important, goes without saying. In acute ileus, particularly, laboratory methods of diagnosis are of no avail. We must make a bedside diagnosis and make it promptly. Whether to operate or not to operate, where the place of incision, what condition to prepare for, what prognosis is probable —all depend to a great extent upon what verbal information the patient gives us and what other knowledge we can elicit with our eyes, ears and fingers.

Adynamic (Paralytic) Ileus, which is the result of lack of adequate motor power in the intestinal musculature, constitutes a large proportion of all cases of ileus.

It is necessary only to indicate the possibility of such an ileus as a sequence of injuries and diseases of the spinal cord.

Operative trauma of the mesentery as well as prolonged and violent traction on it during abdominal operations is likely to be followed by a paralytic ileus; hence, the mesentery should be handled as little and as gently as possible. Nor must it be forgotten that the mesentery carries both the blood and the nerve supply to and from the intestinal tube. If the former is compromised to any marked extent, not alone paralysis of the corresponding coil may ensue but even gangrene and necrosis.

Insult to the nerve supply is frequently combined with injury to the vascular supply in prolonged strangulation of a coil and small intestine in a hernial sac. This is notoriously true in strangulated femoral hernia. When the constriction has been freed, the coil may appear viable and capable of function and be returned to the peritoneal cavity. Yet a fatal result is not uncommon under those conditions because of a thrombosis of the mesenteric veins or a paralysis of the coil in question. The judgment of surgical experience is a very important factor in the successful handling of strangulated hernia.

Similarly, extreme care must be exercised in the doing of operations for the removal of mesenteric tumors and for the repair of mesenteric injuries. Any serious compromise of the circulation demands intestinal resection rather than mere excision of the tumor or repair of the injury.

Ileus dependent upon any of these conditions is in no way characteristic and the best treatment is preventive.

Reflex Ileus is extremely common. It may appear in the course of such acute intoxications as typhoid fever and pneumonia. It is a not uncommon accompaniment of acute cholecystitis, biliary colic, and renal colic; the characteristic symptoms of these conditions are so familiar to all and are usually so dominating that little difficulty need be experienced in recognizing the causal condition.

In the early stages certain thoracic diseases, such as pneumonia (especially in children) and diaphragmatic pleurisy may be confounded with ileus, chiefly because of the accompanying distention. The presence of temperature with chest conditions and its absence with mechanical ileus should differentiate the conditions. The history of a chill is strongly indicative of pneumonia. But the principal obstacle to diagnosis lies in the fact that we forget the possibility of the expression of thoracic conditions by abdominal signs. Maurice Richardson's way of putting the matter cannot be improved upon: "The diagnosis between acute thoracic and acute abdominal disease is always easy as soon as the characteristic signs of either are apparent. The chief difficulty in making a distinction is to recognize that the necessity for that distinction exists, for the thoracic symptoms are always masked by the more conspicuous and distressing abdominal ones. Once the attention is drawn to the possibility of a thoracic cause, not only for the thoracic but for the abdominal symptoms, an accurate diagnosis is perfectly easy." It is not possible to overemphasize the advice that every case with abdominal manifestations in which the diagnosis is not absolutely clear should receive not only a careful chest examination but a satisfactory inspection of the throat as well. Septic throat conditions are not seldom accompanied by signs of peritoneal irritation.

Strangulation and torsion of the omentum and marked torsion of ovarian or other tumors may cause or simulate the symptoms of acute ileus; in the omental condition the diagnosis is almost never made except through operation unless the torsion takes place in a hernial sac, when sudden increase in the size of the hernial tumor may indicate the cause. In the early stages of torsion of other tumors the diagnosis is usually possible through palpation but the distention and spasm in the later stages make satisfactory palpation impossible. Under all these circumstances the surgeon is face to face with an acute abdominal crisis and prompt operation is far safer for the patient than prolonged attempts at academic diagnosis.

Paralytic ileus is the constant accompaniment of a general and a not infrequent one of a local peritonitis. It also frequently appears after abdominal operation—*Post Operative Ileus*—a variety which is of particular interest to the surgeon. It may be of the paralytic or of the mechanical type and the differentiation between these two is a matter of prime importance. The paralytic variety is due to prolonged anesthesia, to operative trauma (whether it be in the shape of careless handling of the coils, undue or prolonged exposure, the unskilled use of retractors, excessive wicking or rough sponging) or to peritonitis. The mechanical variety, while it may have many causes, any one of which may be occasionally active, is almost always due to a kink in the small intestine which may be caused by an adhesive band or by inflammatory agglutination of intestinal coils.

My former chief, Dr. John C. Munro, always felt that the most frequent cause of post-operative ileus was a peritonitis of greater or less degree and extent about the seat of operation, and I believe that view to be in the main correct. The sepsis usually exists at the time of operation and is spread during the operative manipulations. I also believe that some cases of ileus subsequent to operation on septic foci in the abdominal cavity are manifestations of a general septicemia and that local measures for relief are really useless. We know, however, that many cases recover without secondary operation and that autopsy of some of the fatal cases discloses no peritonitis; hence, there must be a certain number of cases of post-operative ileus in which an infective agent is not active.

How, then, are we to distinguish the non-peritonitic from the peritonitic type? And the paralytic from the mechanical? The differentiation is easy in theory but difficult and sometimes impossible in practice, since the fundamental symptoms are much the same. Pain, distention, coprostasis, nausea and vomiting are common to all types of ileus. There are, however, certain features which may influence our opinion in a diagnostic way. The paralytic type (whether non-peritonitic or peritonitic) always appears relatively early after operation, *i.e.*, twelve to forty-eight hours or less. With the peritonitic type the abdomen is tense, the tenderness is general and the pain, restlessness and anxiety are seen from the first; temperature is always present and vomiting is constant. In the non-peritonitic type (often seen in nervously unstable women) the abdomen is only moderately distended; it feels soft and doughy; the patient does not look peritonitic nor does the condition grow bad so rapidly; the vomiting is less frequent; it is usually easy and not violent and is often unaccompanied by nausea; temperature is often absent and the tenderness is usually not marked; the facial expression is calm and not disturbed. The mechanical variety, as a rule, appears seventy-two hours or more after operation but it may be delayed for weeks and even months. The attacks of colicky pain are severe from the first because of the stormy peristalsis and they usually increase in frequency till peritonitis begins, when they cease; the meteorism is often localized, the degree depending upon the length of intestine above the obstruction; peristalsis may be visible. Borborygmus is always present in mechanical obstruction; if not heard at once, it can be elicited by massage; it is always absent in the paralytic type. The mechanical type shows no temperature. Any case in which symptoms begin after the fourth day may be regarded as of the mechanical variety.

None of these are hard and fast signs of differentiation but they are of value in a general estimate of the condition. The effect of the immediate non-operative treatment of these cases may have some diagnostic value and it is certainly of use as indicating or not indicating the need of a secondary operation. In cases that are not very urgent Gibson attempts to demonstrate the patency or nonpatency of the intestinal tract by giving the patient powdered charcoal followed by a brisk cathartic.

Case ascribes the greatest value to the roentgenological examination in the diagnosis of post-operative obstruction of the small bowel. The character and distribution of the gas areas which the abdominal shadow may present will indicate the site of the obstruction. A barium enema may be given to rule out the possibility of colonic obstruction. In a few cases a small quantity of bismuth has been administered by mouth and a picture of the stomach and small intestine successfully taken. I have no doubt that these measures in the hands of an expert like Case are of much practical value but I am of the opinion that they would be of questionable value in the hands of the average roentgenologist. The great majority of surgeons must still look for information to the usual clinical signs.

It is evident that no form of non-operative treatment will be effective in the mechanical variety; operation is essential there. We know from experience, however, that non-operative treatment suffices for the relief of a certain proportion of cases of post-operative ileus. I can see no objection, therefore, to trying non-operative measures for a *reasonable length of time* provided that morphine is not given. At the Carney Hospital a certain routine is followed in the treatment of these cases. Everything is withheld by mouth; salt solution is administered subcutaneously or tap water is given by rectum. Heat is applied to the abdomen immediately on the appearance of symptoms; both the moist and the dry form of heat have been used according to the preference of the patient. The dry form seems more effective and for this purpose an electric-light bath applied locally serves very well; the application of heat to the abdomen should be as continuous as the comfort of the patient will permit; pituitrin (1 c.c) is given *into the muscle* and is repeated every two hours for three doses. Stomach lavage is practised for the vomiting and is repeated at brief intervals (every three to four hours). After a lapse of a few hours an alum, an ox-gall or a milk and molasses enema is given. Frequently the use of these means results in the cessation of the vomiting and the passage of plenty of gas by rectum with consequent relief of the distention; this relief, even if but temporary, indicates that there is no mechanical obstruction and that operation is unnecessary. If, on the other hand, in twelve to twenty-four hours, these measures fail to give relief, if the vomiting continues and if the stomach is not washed clean more quickly and more easily at each successive washing (as it should be if we are gaining ground), prompt resort must be had to secondary operation. Do not waste any more time in useless non-operative procedures.

Several courses are then open to the surgeon: (1) enterostomy after the method of Long. This is a first-rate way of providing for temporary intestinal drainage. While the operation can be done without taking the patient from the ward, it is better, as Long advises, to take the patient to the operating room under the plea of dressing the wound. Local anaesthesia is to be used; it may be necessary to supplement it with a little ether sometime during the operation. Remove one or more sutures and separate the edges of the incision. General and local conditions will indicate whether an extensive search for the site and cause of the obstruction is warranted or not. Usually it is wise to grasp the first distended coil that presents. Enclose an area at least 1-2 inches in diameter with a purse-string suture of chromic catgut, taking rather deep bites with the needle. By catching loops of the suture at two equidistant points and holding the united ends between the fingers, three points of support are secured which will give sufficient tension to steady the parts and to limit the chances of soiling the field. Make an opening through the intestinal wall with a cautery-point. Insert a firm rubber-tube about twice the size of the opening. The disproportion in size causes the edges of the fistula to hug the tube closely and thus prevents leakage. Now tighten the purse-string suture, at the same time inverting the mucous edges of the fistula.

A second purse-string suture may be laid, if the condition of the bowel wall will permit. Bring the tube out through an opening in the omentum and fasten the tube in place; not to the bowel by suture but to the skin by narrow strips of adhesive plaster. Pack the open abdominal wound lightly with gauze as a protective.

(2) After picking up the first distended coil of intestine, incise the wall, insert a rubber tube and flush out the bowel thoroughly above and below the opening and then establish drainage of the lumen through a glass or rubber tube carried over the bed and into a receptacle. The tube may be fastened by one or two sutures to the edges of the opening in the intestine.

(3) Under general or spinal anaesthesia, open widely the operative wound, evacuate any collection of serum, blood or pus that may be present and search in the region of the operative field for obstructing adhesions or agglutinations.

(4) If no local cause be found and if the presence of a mechanical ileus is indicated by the collapsed coils, which are always present below an obstruction in the small intestine, then the collapsed intestine must be followed up until the obstruction be found and relieved. It is usually either a band, a volvulus, or an internal hernia.

One thing is strongly to be urged. Do not continue non-operative measures too long. Do not rely too much as a favorable sign on the patient's well-feeling after a stomach lavage and on the temporary cessation of vomiting. Pass the stomach tube again in a few hours; the reaccumulation of intestinal contents in the stomach is of evil portent, means an unrelieved obstruction and indicates the necessity of operation. The best judgment must be exercised in the choice and extent of operation; do not attempt too much. A live patient with an enterostomy is far better off than a dead one with a completed resection and anastomosis. As a rule, the patient's condition will not permit a prolonged search for the cause of the obstruction or a complicated operation for its removal. When the obstruction is purely mechanical and no sepsis is present, greater freedom of search and action is allowable. I agree with Long that enterostomy offers the greatest relief in the cases of mechanical obstruction and not in those cases in which the gut musculature is paralyzed. My own experience with it in the latter class of cases has been disappointing.

Acute dilatation of the stomach is a condition occasionally confounded with post-operative ileus. Such cases of the former condition as I have seen have always, without exception, complained of a constant dragging pain below the left costal border. Even with no other symptom, the complaint of this pain always leads me to pass a stomach tube and the results are sometimes surprising. The stomach tube is really our only means of diagnosis as well as of treatment. It should be passed repeatedly, if necessary.

Treatment of Paralytic Ileus. For the most part it is merged in the treatment of the causal condition. The variety accompanying pneumonia and diaphragmatic pleurisy responds quickly to the subcutaneous use of morphine. Preventive treatment is of value in that variety secondary to operative trauma; when it continues after the removal of the causal condition or the cessation of its activities, the application of heat to the abdomen, gastric lavage, the use of pituitrin (intramuscularly) and the employment of enemata are our mainstays. I have not been impressed with the value of enterostomy in the treatment of paralytic ileus. If it is to be employed at all, it should be used reasonably early.

I should like much to consider the varieties of ileus called Dynamic and Mechanical but time will not permit. The subject of obstruction of the small intestine has been touched only in a general way, but I trust that I have touched upon certain practical aspects of the subject with sufficient clearness to have made listening to me worth your while. I appreciate very much the honor of having been invited to address this Society and I am most grateful for your kind attention.

IS IT WORTH WHILE FOR THE MAN OF FIFTY TO GET INTO PHYSICAL CONDITION? CONSERVATION OF MAN POWER AT OR BEYOND FULL MATURITY.

By J. Madison Taylor, A.B., M.D., Philadelphia, Pa.,
Professor of Applied Therapeutics, Temple University, Medical Department.

Man power, in order to fulfill its destiny, must be ample, and not only latent but available. Potential energy, be it never so abundant, must be transmuted into kinetic, the possible into the actual, and applied to the object in hand.

For the man of fifty this is even more urgent than for the young man, since indolence, apathy or evil habit then dulls the edge of motor enthusiasm and saps initiative. Hence disuse cripplings become only too common, often leading to degeneration and decrepitude.

The state of unfitness for effort which prevails among the fully mature is really pathetic and wholly unwarranted; it is a culpable, almost a criminal wastefulness of good energy.

Upon right decision of the above query does winning of the war depend. In wars of defense, of conquest over aggressive adversaries, or in competitive industries, man power must be not only available but adaptative.

I.

It is eminently worth while for the middle-aged citizen to get into physical condition. After agreeing as to what that state is, then let us agree as to the supposed perils, and later as to what to do and why. No one need imitate the athlete and undergo a long, exacting and strenuous course of physical training, but we should all conserve and enhance our body powers by suitable and constant use. This obtains for every one but the man who toils with his body, and even for him changes of form in actions are desirable; often far more salutary than mere rest.

For him whose chief work involves strained attention and is of a sedentary sort, physical outlets, (motor discharges) are imperative to preserve harmonious interaction between intake of food and its final disposition; between nutritive balance and motor balance, for thereby hangs a tale of nervous equipoise and tissue respiration.

"As the string unto the bow is," so is physical action (motor discharge) to nerve and brain action (nervous discharge) in the relief of tension strains and their effects.

Who is to be the judge of how much and what a man of mature age should do? A difficult question to answer to the satisfaction of all. If you say it is the duty of the medical adviser you must stipulate for one who is qualified through some experience and judgment in the domain of physical activities. The "physical culture expert" too rarely has discrimination. Beware of the advice of "sporting friends."

Self regulation is the first, the last, the all-important consideration; a process to be learned and practised. We may also use the term "conscious control," an acquiring of mastery over one's parts and powers to the end that each and every item in the make-up as a whole (psycho-physical mechanism) shall acquire equipoise between the start (initiative), the push, pull or turn on the one hand, and on the other, the hold back (inhibition), the guiding or governing or the tempering of motor forces (motivation). Thus every cell and every impulse shall find its level, poise, or equivalency and maintain this automatically as well as consciously.

Among the desiderata are:

(1) Right states of structures from a balanced ration, the body chemistry (metabolic poise) onward to mobility, elasticity, contractility, etc., making for normality or adjustments in living parts; (bio-kinetics or orthobiotics).

(2) Right posture, attaining such poise among the active mechanisms as shall make for economic adjustments between, not only the moving agencies (muscles), the levers (bones), etc., but the just interrelationships of all the complex inside structures.

(3) Right movements, their precise performance, training, grace, exercising (economic use, not only in direction, force, speed and the like, but in frequency and intensity of repetition), to the end that, not only shall balance be maintained in the transmission and transformation of force wherever and whenever desired, but to produce some definite economic result. Waste motion, scattering of force, is the chief fault in all mechanisms.

For example: Getting the body out of bad into good motor habits, removing disabilities of stiffnesses, limitations of excursus; of enhancing nimblenesses; increasing promptnesses in response from impulse to do, interpretation, decision to exact coördinate acts. Illustration: Reaction time: *e.g.;* step on a tack, note how soon one picks up the foot and pulls it out, etc.

II.

Many wise persons and a few scientific ones, too, will answer to the headline query "no." Some of maturest and most judicial minds hold that physical exercise of any kind is not essential to physiologic balance. They claim it is enough for most persons to exercise the mind alone and to live wholesomely in order to maintain life processes at their best. Horace Fletcher has demonstrated in his own person (and others) that by thorough mastication alone, as he teaches it, and without special training he was able, at the age of fifty-nine, not only to equal the endurance tests in the Yale Gymnasium (maximum, 175 points), but easily to surpass them, attaining a personal maximum of 300 points; all the while living on seventeen cents a day. S. Weir Mitchell,* world famous for brilliancy, many sidedness and scientific acumen, was a living example at 85 years of an enthusiastic mountain climber, who spent hours a day in summer on foot among the hills. He furthermore emphasized in his practice the need of maintaining bodily (motor) efficiency, by urging his patients to make use of suitably adapted exercises.

A goodly number of people, it is true, retain health while putting forth the minimum of bodily exertion. It is also true that a considerable number of those who faithfully pursue motor activities do fall into sundry kinds of evil happenings. These unfortunate persons will generally be found upon analysis to have had unrecognized functional defects, latent or concealed organic derangements, somewhere among the nervous, circulatory, renal, or glandular systems. It is fair to assume that the majority could have obtained correction had proper medical supervision been supplied. Many such have come under my personal observation.

Occasionally I meet instances of exhaustion states, accompanied by distressing neuralgias, apparently due to excessive muscular activities. One gentleman of sixty consulted me for a deplorable state of exhaustion neurosis, who had lived an almost blameless life, but persisted in playing tennis, riding a bicycle, rowing a boat and variously overtaxing his strength. Judicious moderation in these sports, along with a simplified method and elasticizing measures produced a prompt cure. He was in good health twenty years after.

All else being equal, we may safely assume it is desirable not only to cultivate and maintain motor efficiency, but to enhance our supply consonant with other economic and biologic demands.

Man is a wonderfully endowed animal, well known to be capable of excelling most domesticated animals, whose power and endurance constitute their chief utility. His superiority as a doer, as a goer, to that miracle of activity and stamina, the horse, has been proven repeatedly. The chief element of this human supremacy is generally assumed to be the directing mind. This obtains only to a moderate degree in the instances of savage runners, jinrikisha men, Balkan mountaineers, etc. All the evidence, when sifted, points to the paramount dynamics which resides in fully developed human muscles and those collateral mechanisms which contribute to sustain them in normal competency. For the man of fifty, the *sine qua non* is to retain elasticity, pliancy, mobility, as a fundamental condition of functional competence, notably of the vasa vasorum.

Nor are the diatribes of sedentary cavilers, combined and focused upon the negative, competent to disprove the primordial truth that: till man shall be utterly degenerated by social evolution into the nearest possible approach to a disembodied intelligence, he is, and will remain, the better for a systematic (but economic) development of his motor equipment.

III.

How far motor efficiency conditions intellectual competence cannot be statistically determined. Facts to sustain the significance of the interdependence are adduced in another place. Throughout recorded history there is abundant and unimpeachable evidence to show that intellectual forcefulness has advanced *pari passu* with modes of life designed to encourage bodily betterments. It would be tempting to pursue historic parallels, but would lead too far afield. Suffice it to cite one convincing contribution, the book by Mrs. Sophia P. Shaler, entitled "Masters of Fate, the Power of the Will" (Duffield & Co., N. Y., 1906). In this book are sketches of the lives of about 250 human beings distinguished in various branches of the higher realms of endeavor, illustrating how they not only triumphed over serious bodily limitations or infirmities, but also consciously selected and pursued well-devised plans for raising their coefficient of dynamics to a degree enabling them to reach the acme of varied proficiencies.

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* As his close associate for 20 years, I speak from personal knowledge.

Illustrations such as these are peculiarly significant because they represent pitiable physical defects. What a noble showing could be made by conversely citing the lives of those who achieved large successes upon a good foundation of physical vigor, judiciously amplified!

Should any captious seeker for truth desire to array the contrary evidence and portray and warn of methods pursued by those who refused obstinately to employ motor activities either for use or pleasure, it would be instructive reading. It remains to be done, so far as I can learn. That much foolishness is uttered by injudicious enthusiasts extolling the virtues of "physical culture," unfortified by critical judgment or by compliance with the criteria of evidence, those of us who believe in wisely training the body, regretfully admit.

One point must be conceded by those who condemn or would ignore the desirableness of physical fitness in maturity or later, viz., that it is possible to learn the truth and judge only by personal experience. Unless one has enjoyed the thrilling pleasure of a body in full tone, in harmonious poise or discipline, for whatever task, duty or competition offers,—that spendor of coördinated power, endurance and capacity, he cannot speak with authority. Or he who claims in a long past youth that he was then full of disciplined mettle, able and doing whatever a vigorous youth impelled, but who early subsided into a sedentary routine, is not one to speak the final word, pro or con.

It is possible to neglect with some safety bodily activities till full maturity. There comes a time, however, when it is no longer safe to trust wholly to natural adaptations and compensations, or to nature's god, to supply health indefinitely without personal coöperation. A few may be so fortunate, but it would seem the plainest duty to ourselves to seek counsel and be guided in the right way to earn health by sane vigilant efforts.

Long ago, Emerson, in formulating rules for achieving health, laid down the axiom that it must always be earned, not merely deserved. Just as it is a fallacy for anyone to expect the world to supply gratuitously some form of living without making adequate efforts to earn, so it is wholly fallacious to expect the powers of nature to carry the burden indefinitely without supplying personal coöperation. Nothing belongs to us by any right except that of intelligent effort.

IV.

What is "physical condition"?

Let me offer in evidence a leaf from personal experience. It has always been my ambition to keep in fair condition, partly as a groundwork for effective life, partly as a legitimate pleasure, and not least as a clinical evidence of the attainable. During the formative period my own experience was that common to most American youths, with a difference; my ambition was to excel physically, not in feats alone, but for a definite object, viz.: to fit myself for a long life of useful activities. Hence what is ordinarily the spontaneous action of thoughtless youth seeking amusement was for me that, but something more—a laudable purpose or ambition. During the exigencies of active medical practice it is not permissible by custom, much less by the exactingness of a work never completed, to indulge in active sports. None the less, I found it possible to utilize odd moments and to keep my circulation adjusted to all demands, some of them sudden and severe; to keep my weight the same for over forty years; to preserve the size, quality and, above all, the elasticity of musculature closely to the form established during college days. It may be urged that many succeed thus far with less intensive effort, but the efforts expended by me have accomplished something better. As years pass and old age disabilities arise, the care thus bestowed will, in my opinion, go far toward maintaining vital rhythms and act as a defense against catastrophe. In this view I am sustained by analogy and fortified by experience and much scientific and practical evidence. Objections lodged against that form or degree of physical training employed by competitive athletes become cogent mainly because of the excessive strains put upon the organism by the contest, after inadequate preliminary process. A certain number of graphic instances of damagements do come to public notice and are made to serve as lurid texts, as solemn warnings. Little attention is given to the vital question of how valuable is the systematic physical education thus achieved by the thousands who remain unscathed, pass into the ranks of triumphant achieving citizenship by reason of the lessons learned. Those lessons teach the value of persistence, of courage, of endurance, leading to conquest in any line.

Personal observation during a lifetime of over three score years has resulted in amassing much reliable information. Logical deductions tend to prove that physical fitness, natural or acquired, gives enormous advantages to the possessor. Statistics are not available upon which to base scientific deductions, hence dependence must rest upon the statements of men who, like myself, endeavor to judge honestly of the facts by experience and critical observation, and subjecting themselves to the tests.

We may first meet adverse evidence, assertions of those who would have us believe that systematic physical education is needless, makes for animalism, or leads to hurtfulnesses physical or moral. I published a paper on "Effects of Athletics on Length of Life," in 1893, in which were cited life histories of thirty men all over fifty, some over seventy, who had been extraordinary athletes and were at the time of writing in apparently perfect health. Most of these men I knew personally. At present I could multiply the number many times, since my intimate acquaintances, co-eval with myself, are chiefly among men of over fifty or sixty years of age. With equal faithfulness I could cite catastrophes which fell upon a certain few who had been athletes and became disabled or died. The narrative of the latter would be a dismal tale, dealing chiefly with the effects of alcoholism, dissipation, diseases self-induced, only rarely due to "natural causes." In vain do I look among the pages of my memory for authentic instances of genuine damage upon a healthy organism by even extraordinary physical strains. The reply to this might be that possibly those breakdowns, so graphically, even triumphantly pointed out by objectors, were not caused by over-strenuous but by ill-judged or inadequate physical training.

My experience is that systematic training always benefited unless there existed some latent defect, and this should have been discovered before and provided against. Of the three or four instances of such breakdown coming within my experience, there was always some concealed organic anomaly or the guilt of abnormal recklessness and disobedience. Contributory causes must always be reckoned with in the light of degrees and qualities of aggravation of essential causes.

V.

What are the essential causes of physical breakdown? They are many and diverse. Most, if not all, lie far back among constitutional defects, early infections, toxic effects or residua, due to functional damage to the adrenal system, the chief defensive and regulative mechanisms of the circulation.

The foregoing is about the worst indictment which can be formed against excessive bodily activities. It must be borne in mind that instances which show a history of abnormal susceptibility to fatigue are usually those who have suffered from previous exhaustion states, —a very different thing from even excessive repetitions of acute fatigue.*

It is an interesting fact that those persons whose blood pressure is constantly high, the plethoric, over-nourished type, are superior in vigor till middle age; then they are liable to fall behind in the race. While organic interrelationships are still in good poise, these men forge to the front, and seem to accomplish more. About middle age, the slender, paler, seemingly less robust type, with normal or low blood pressure, seem to acquire more power, grow stouter, more muscular, and often times far surpass not only in endurance but in brute strength those of the plethoric type. As to longevity, the slim notably outlive the burly ones.

Weak spots or damaged structures may readily become aggravated by over-energizing, hence overstrain of the blood vessels by fatigue toxins until structures give way. The giving way may be partial, occasional, relative, and possibly reparable. They may be cured in proportion to the nature and character of the causes of their persistency, rather than to any temporary severity. Starting points, origins, of damage spots are only understandable and corrigible through an exact knowledge of the natural history and phenomena of disease. Also there may be inherent in the individual such a low measure of restorability (organic adjustment) as can only be inferred. Here we come into touch with special susceptibility to foods (proteins) which form the basis for many kidney disintegrations.

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* Notably the cases of Thayer and Busch, Jour. A. M. A., Sept. 10, 1904, cited by Sajous, Vol. ii, p. 1555.

It will be plain, however, that the problem of structures giving way to physical (muscular) strains is one thing; to the toxic bio-chemistry of the body-formed poisons (anaphylaxis), another.

It is yet another matter how the body shall react when subjected to such exercises as are well calculated to enhance functional competence, hence structural integrity, the upbuilding of tissue, of power, of essential vigor: elasticizing movements, for example, definitely aid the action of vasa-vasorum, hence are conservative.

The human organism advances, other things being equal, in progressive steps, toward its highest fruition by the steady, judicious active use of its various highly differentiated parts. Normal use contributes to higher and better degrees of differentiation.

Neglect or disuse opens the door to retrograde changes. To the end they initiate at least as many perils as over-action. The practising physician sees vastly more evidences of harmfulnesses resulting from the reverse than the obverse. He may not always realize that the morbidities presented are at bottom due to misuse or disuse, so uniformly is he called upon to apply remedies for functional depreciation. That physician is the wisest man who takes cognizance of both factors, and furnishes both correctives, *i.e.*, radical measures for repair along with education in growth of reserve powers.

Too often the fault is that of the patient who demands only immediate relief and fails to encourage or refuses supervision which would lead to radical repair.

VI.

How then shall a person, say in middle life, proceed to secure that pleasurable, desirable state which may be called "good condition"? The term may be borrowed from the language of the athlete who, though being a person in vigorous health, yet purposes to use all known means so to enhance his vigor as to translate the most potential into the most kinetic energy, thence into the utmost power, skill, speed, endurance, in short, concentrated or proficient vitality, of which the body is capable. This highly differentiated power may be applied to achieve victory in any domain.

Certain fundamental facts concerning the status of the body should be held in mind by everyone: The motor impulses of infancy and childhood are divinely implanted instincts for urging the individual to acquire symmetrical development, normal capabilities leading to accurate adjustments and specializations of centers as well as of the grosser mechanisms. Moreover, this habitual training contributes not only to safety and efficiency as an animal, but also to intellectualization. Unless habitual body use is encouraged, along with suitable opportunities for the play of spontaneity, the individual is so limited in various directions that full competency is never attained. Few ever achieve full development in any direction. Even in the apex of young adulthood, there are constantly found evidences of deficient elaboration of parts. During diverse exigencies and varied forms and demands of life these earlier defects frequently grow worse until they act as incurably weak links in an otherwise efficient chain.

To attain extraordinary development or repair of these weak spots or parts is entirely possible, even in late life. I have cited and can add to them many instances of elderly persons overcoming crippling defects by suitable developmental measures. My experience with an individual is not seldom sufficiently prolonged to warrant the belief that life was for him not only made better and happier for these procedures, but actually prolonged. One notable instance (typical of many) is that of a dear friend who had been under my observation and direction for over twenty years, who from such a state of feebleness that many regarded him as an irremediable derelict (while over-coddled), is now at sixty-five years, a man of splendid mental and physical capacity; indeed, of wonderful vigor and endurance. All this may be attributed to progressive outdoor activities.

VII.

We may roughly define "condition" to be a state of nice adjustment of the heart action to the arterial pressure, and this to the respiratory capacity. There is much more, but this will serve as illustration. Let me cite personal experience again. The narrative ensuing will serve to bring out several factors common to most other persons.

My professional work is similar to that of any active practitioner—continuous, irregular in demands, and exacting. In summer my life is on the rocky coast of Maine, near mountains. During the winters in the city I keep myself in a state of as good vigor as possible, but can spare little time to pursue open-air sports. As stated elsewhere, my custom and pleasure is to utilize odd moments to elasticize, stretch, and make active tension and relaxation movements, also systematic respiratory acts. Soon as the summer place is reached, through tests by walking up hill, my heart is shown to be sadly out of condition.

Each year I fear to find the effects of advancing age so serious as to forbid a return to full strength. Stiffnesses do advance, likewise painfulnesses in joints. There is only one period of the day available—between five and seven or eight a.m. These two hours, or most of them, are devoted to bicycling to some attractive woodpath, donning moccasins, taking my cudgel and walking up slopes—often up one of several mountains of from 500 to 1500 feet. At first, breathlessness comes at once and curtails climbing sadly. Every few yards of elevation compels rest. It was not the same at 35 that it is at 60. The adjustment beween the heart pump and respiratory reaction, measured in seconds, is now much slower but still prompt. It serves as an index for testing myself and others.*

VIII.

How shall one set about attaining physical condition?

The best way to tell the tale is to cite an illustrative instance, that of a middle-aged man who achieved a marvelous degree of increased health and working efficiency. To be sure, his methods were so radical and thorough that few may be willing to follow him in all particulars, but he serves as an excellent examplar. Various modifications can be made by each one, as circumstances, tastes and previous states make necessary. The essential principles are the same for all.

F. F., at the age of 52, was an active business man, successful, sound organically, large and powerful. He was too heavy; fairly active, but conscious of a number of minor ailments common to his age and form of life. There were recurrences of digestive discomforts, irregularities of sleep, of heart action, undue fatigability, susceptibility to colds, and particularly those stiffening states in muscles and joints miscalled "rheumatism." Wisely, he determined to rid himself radically of all these. Today, at 65, he is a model of vigor, of endurance, of resistance to cold and disease, and is capable of accomplishing four times as much as before. His structures are all elastic, his muscles responsive, controllable and normal as those of a man of 30. All this was effected by gradually inuring the skin to exposure, and to thorough frictions by brush and hands; exercising nearly nude, but securing complete elasticity by simple free movements, stretchings, tensions in normal directions, followed by full relaxations; by systematic breathings, and, when opportunity offered, long walks. He modified his diet along lacto-vegetarian lines, nuts, fruits, vegetables, chiefly uncooked, some whole wheat or corn bread, and only occasionally, when a guest at the house of others, taking the ordinary mixed diet, but no alcohol, tea, coffee, or tobacco.*

Similar results can be obtained by a less rigorous régime, but it is questionable whether so complete a regeneration is possible, such tremendous power and absolute freedom from all bodily discomforts attainable on a too liberal, over-varied diet. Among the curious and gratifying effects in this instance were complete freedom from all old-age soreness and stiffness in the tissues and an extraordinary insensibility to cold or temperature changes. Now he wears only figments of underclothes. His winter climate is a rigorous one—northeastern Maine—yet only when in a conveyance does he wear an overcoat, and then needs little more protection than another would on a cool summer's day.

In many ways he puts his strength and endurance to severest tests, and they are phenomenal. The one most prized effect is the power to accomplish results in his business, by reason of the full renewal of organic capacity. In his tastes, enjoyments of sense-organs, and freedom from fatigability, there is formed an appanage which none could fail to covet.

One often hears the sneering remark that to sacrifice so much of time, effort and sensual joy in "these grad grinds" is beyond reason. Many declare they would "prefer to live while they live, and leave the future to take care of itself." Each one to his tastes. Meanwhile, let us briefly enumerate: (1) the amount of sacrifice demanded, (2) the advantages to be gained; comparing these with those which would follow an ordinary life of complacent inactivities and conventionalities, and (3) the principles which should guide one in the quest.

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* So much for leg exercises. The cudgel is available to activate the arms alterngtely and the torso; striking at bushes and occasionally devastating a small tree. This is far superior to golf for many reasons, chief among which is the fact that one may do this when and where one can find time.

* F. F. has for years used a little hand mill to grind his own carefully selected wheat and maize.

(1) It is true that the customs of society are ordered on liberal lines; that by common consent, when the means of gratification are secured, it is deemed proper to utilize civilized blessings to the limit. What that limit shall be would bear discussion. It is a matter of familiar knowledge that the most wealthy are, as individuals, only rarely reckless in the abuse of food, of alcohol, etc. There are found, especially among those who have enjoyed great wealth for generations, many far more economical in most particulars than those of only moderate means. They are more interested in following well-ordered lives, in employing financial power to provide them with opportunities to live actively in the open air, to pursue rational amusements—all which conduces to health and longevity. Those who give rein to appetites, become reckless of personal consequences, are oftener those who make money readily—"easy come, easy go"—who are less able to exercise restraint because unaccustomed to plenty.

(2) Now as to the degree and kinds of personal sacrifice required to enable one to get into condition; they can be rapidly outlined. It is one of the purposes of this article to show how little of time and effort is required. Ordinarily there is no occasion to demand disarrangement of the routine procedures of life, of whatsoever occupations one may follow. The whole question is one of sincerity of desire, of wholesomeness of purpose.

As illustration I may be permitted to cite again from professional experiences. Instances can be adduced from the whole gamut of human activities, from youth to extreme old age, from captains and privates of industry to humblest householders, professional men and women of largest responsibilities to "retired gentlemen" or gentle women who are perishing of rest (or rust), of stagnation, of obesity, or dry rot.

IX.

Vital processes are stimulated to renewals by any form of mental or physical activity. It is chiefly important to insist upon such hygienic measures, such educative exercises, as shall establish a due proportion (and suitability) between food intake and outgo of waste products, and between inherent powers of motion and such use of active parts as shall maintain mobility, elasticity, pliancy, hence motor competency not only for direct use but for supplementing the oxidation processes. This can be done, and will be economically done, by holding in mind certain plain rules (which should be instinctive) of posture, of completeness of movements commonly employed, as shall prevent the almost inevitable loss of mobility through disuse. It is true that many forms of vocation (ordinary every-day occupations or household work) afford ample opportunities, provided they are performed with conscientious thoroughness.

All that the adviser may demand above this is a *few moments daily of fundamental movements in normal directions* to make sure that the body performs, if not daily, then twice or thrice a week, the majority of normal movements.

(3) What advantages can be claimed to accrue from all this attention and effort? No matter how comfortable one may feel, how peacefully the organic actions move in their appointed or daily course, as youth is past there begins a steady slowing down of the vital streams, a clogging of the sewers; degenerative changes occur in highly differentiated structures responsible for keeping the divine flame brightly burning until that time when it shall flicker and go out as is ordained.

To be sure, in the case of a few fortunate individuals the tides of life ebb and flow serenely till the natural inevitable end. The vast majority, however, need to use intelligent effort to keep the lamp brightly burning. This is as true of an insentient engine as of a delicate and complicated vitalized machine. Suffice it to say that in the experience of physicians instances are incessantly met of grave disabilities due almost solely to disobedience to the more imperative natural laws; some hurts received are small but others so large as to be never wholly remediable. All these decrepitudes could have been prevented by habitually exercising conscious control or yielding instinctive obedience to nature's self-regulative laws.

A large proportion of disabilities, often of diseased states, can be remedied satisfactorily by following well chosen, rational or wisely directed personal hygienic procedures. It is often possible not only to re-acquire good health, but also to go much further and develop unsuspected latent powers till the result is an astonishing betterment or rejuvenation.

(4) The essential principles by which physical reintegration or restitution can be achieved may be only lightly touched upon in this essay. We will merely emphasize certain points of which few seem to realize the importance. Every thoughtful person is aware of the fundamental items of personal hygiene. Even here there is much debate, even confusion, and some unfortunate disagreements as to important details or procedures. It must be admitted that divergences of view are often based less on methods than on circumstances, which may be despotic. Among these despotic circumstances are vocation, climate, racial peculiarities, or long-established habits, tastes and accustoming.

Diet is a great subject being now forced on all. The question of suitable diet hangs more on: (1) how one eats; (2) how much, rather than (3) what one shall take. Underfeeding in certain states is a peril; in a much larger group overfeeding is a direct, perhaps the sole cause for organic derangement and degeneration. The balanced ration is capable of wonders of betterment. It is pretty well established that an excess of proteid food results in a large group of hurtful effects. The whole range of articles suitable for the diet of an individual must be judged in the light of so many factors that it is the prerogative of the directing physician.

How to eat has been taught so graphically and elaborately by Horace Fletcher that it is well to recommend his books to those who wish to be well and well informed. Briefly, his rules may be summarized as follows:

Take a mouthful of food and chew it till it is swallowed unconsciously. Take no more food in the mouth till the first is disposed of. Use no fluid to wash down the half masticated food.

For temporary purposes a reduction of diet to simplest articles and smallest variety is of life-saving efficacy. It is also the one means to get into condition promptly. When digestive processes or harmonies are in doubt, simply omit one or more meals till equipoise returns.

Much is to be said in favor of a diet of nuts, fruits, cereals, with or without milk and eggs. Safe rules for anyone, unless a physician shall be consulted, are to be careful how to eat and to avoid much meat and excess of sugars; take whole wheat bread only one day old (except fresh corn meal "pones"), and select from an ordinary table what experience shall teach is suitable. Alcohol as a beverage is objectionable.

Few factors in personal hygiene are more important than the care of the skin, or contribute more to reform health. Friction of the skin is so valuable that it is safe to assert that the faithful use of a flesh brush is superior to the careless bath. Bathing is a delightful luxury and most useful as a remedial measure, but cleanliness can be equally well secured by thorough skin friction. To avoid the evil effects of chill, of catarrhal states and to keep the kidneys in good order, few measures are superior to salt friction baths. As a routine procedure let me recommend the following: On rising throw off the clothing and rub the entire body briskly for at least five mintues; then resume a covering, *e.g.*, a wrapper, and proceed with the toilet; or better, at once take a sponge bath, using a wash rag dipped in cool water on which is placed a small handful of salt. Rub this thoroughly all over the surface, beginning with the feet, then upward and rinse off with cold water and rub dry. Or one may use soap to arm-pits, buttocks and feet, but only rarely all over. Afterward rub in some oil, especially in cold weather, two or three times a week. The subject of achieving full tissue elasticity is so paramount in postponing the effects of deterioration that it warrants a separate paper.

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THE PROSTATIC—HOW SHALL HE BE MANAGED?*

BY FREDERICK B. SWEET, M.D., SPRINGFIELD, MASS.

THE prostatic has ever been a difficult patient, both from his own and the surgeon's point of view. He is old, has the inevitable degenerations that go with age and suffers from a condition which demoralizes one of the vital excretive functions of his body. The mechanical barrier to the voluntary control of the urinary stream, moreover, causes a strangely unbearable type of suffering. Catheterization brings temporary relief, but leads to yet more grievous ills.

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* Read at the Annual Meeting of the Hampden District Medical Society held at Springfield, April 23, 1918.

All who have practised for long have had experience of these cases and will, I am sure, concur in the opinion of a well-known surgeon who said that, "The last day of the unoperated prostatic may well be said to be his best day." His last day, according to this estimate, is not long deferred, for the average length of life of the unoperated case is three years from first catheterization. That an occasional patient becomes immune to infection and survives for long years has no significance unless his experience so influences his physician and friends as to be the cause of fatal delay in dealing with some fellow sufferer. Without prompt operative relief, the prostatic becomes a slave to his bladder and a miserable septic, uremic, degenerate in body and mind. Medical treatment cannot cure him; his trouble is primarily mechanical and must be relieved by mechanical means. His problem is, therefore, surgical and as such, has proven highly intricate and difficult.

No class of case requires greater care in selection, skill in surgical technic and judgment in general management. It has, therefore, been very interesting to watch the evolution of the surgery of the prostate. Early attempts at surgical relief yielded so high a mortality that for years after the beginning of the era of true major surgery, few had the hardihood to attempt the operation. The mortality was so alarming, as experienced by the average surgeon, that the statistics of Freyer and Young, when published a few years ago, were received with a good deal of skepticism. Time has brought vindication to both of these specialists, however, and none now question the feasibility and comparative safety of operative relief for these aged sufferers.

Freyer doing the supra-pubic operation, reported 1000 cases with a death rate of 5.5%. Young, using the perineal route, reported about 500 cases with a mortality of 3.7%. These remarkable results were possible because the cases were picked cases and because the operators were men of unusual skill and experience. Nothing like such results had been obtained by any other surgeon. The general death rate in the run of hospital cases at that time was estimated by Rovsing as from 10 to 20%.

The publication of Freyer's and Young's statistics and methods of treatment created great interest and have been productive of remarkable improvement in general results. A world-wide controversy arose as to which route was preferable. The concensus of opinion now is that for the majority of cases, the supra-pubic route is the best.

Then came discussion as to the best methods of pre-operative and post-operative care and for a time there was such divergence of view, that it was difficult to form an intelligent opinion from the literature. Lately the pathologists have entered the lists and indulged in lively argument as to whether the hypertrophy was adenomatous or a true chronic prostatitis. The present feeling is that the two conditions are practically the same,—an adenoma being nothing more or less than a chronic lobular prostatitis. None dispute the rather frequent incidence of prostatic carcinoma. Adenomas occur in the lateral and median lobes while carcinoma seems to elect the posterior lobe. Out of all the research and discussion has been developed a plan of management which has removed these risks from the extra hazardous class to one of relative safety.

Before outlining this plan, let us briefly consider some of the difficulties which are presented and must be overcome.

The age of the prostatic patient is from 40 to 90 years. He necessarily suffers in varying degrees the infirmities incident to his age, such as hard arteries, chronic degeneration of heart and kidneys, chronic bronchitis, etc.

Superimposed is a condition which tends to aggravate these natural degenerative processes and adds a formidable pathology of its own:—cystitis, vesical calculus, diverticula, dilatation of ureters, and kidney pelves, compression of kidney, pyelitis, pyo-nephritis, general sepsis and uremia. The degree and severity of these several symptoms are as varied as the number of cases treated.

One patient is young at 80, another old at 60. The first catheterization sounds the death knell of one, while years of catheter life may be well borne by another. Some come with obstruction as their only symptom; others present themselves with bladder distended, compressed kidneys, dry tongues, torpid mental state, high blood pressure, general sepsis, failing heart and profound uremia. In most cases the kidney symptoms dominate the clinical picture and are the determining factor in the case. The kidney disturbance is the direct result of compression from damming of the urinary stream. Different kidneys react differently to back pressure. Generally, if the bladder is able to empty itself fairly well, large amounts of urine of low gravity will be passed. If the bladder wall be hypertrophied and its cavity contracted, small amounts of urine will be frequently passed but the 24 hour amount will be small. Where obstruction is all but complete, the kidneys secrete until the bladder is filled to capacity; when secretion ceases.

If a bladder so filled is suddenly and entirely emptied by catheterization or cystotomy, it will probably at once fill with blood. This is often a distressing complication. It can be prevented by the introduction of an indwelling catheter through the urethra with gradual withdrawal of urine. The moment the urine becomes blood tinged, the amount drawn at a time should be lessened. It often requires days before the bladder is sufficiently emptied safely to permit free constant flow. The intermittent flow is best managed by using a cork in catheter end as a control.

The question as to whether the obstructing tumor is of the usual benign type or is malignant, must be considered. If the patient is under 60, we should always suspect cancer—also in cases beyond that age, in whom the symptoms develop suddenly. Vesical stone is a frequent complication and if the operation is done at one stage, doubles the operative mortality. New growths of the bladder wall occasionally occur coincidently with obstructive prostatitis and are a very serious complication.

These complicating conditions are much less serious, however, now than formerly, for reasons that will be later given. The most formidable difficulties of the situation are the direct result of the obstruction, namely, kidney compression, sepsis and consequent disturbances of the cardio-vascular renal system. Bladder drainage is, therefore, the first essential of treatment, since it decompresses the kidney, affords exit for septic material and immediately relieves the patient's suffering.

Autopsy findings and observations at the operating table, provide undeniable evidence of the effect of obstruction at the vesical neck, in that the cases show hydro-ureter, hydro-nephrosis and pressure destruction of the kidney substance. More than once, I have been able to put my index finger into ureteral openings, so dilated were they from back pressure.

With this condition of the bladder, ureter and kidney, it is easy to understand how easily sepsis may be introduced by catheterization or by way of the blood stream.

Soon after Freyer and Young made their contributions, several men, working more or less independently, became convinced that the hazard of these cases lay in the compressed and diseased kidney and not in any inherent defect in the operation itself.

Dr. Lilienthal of New York was one of the first to modify his treatment in accordance with this belief and drain the bladder as the first step in the operation. He introduced an indwelling catheter through the urethra and was gratified to find that this simple procedure often changed a bad risk to a safe one. Following this more or less haphazard work, Dr. Paul Pilcher of Brooklyn undertook a very painstaking and scientific investigation of the effect of decompression by drainage which has resulted in the establishment of certain clinical facts and been of great value in the solution of the whole prostatic problem. Before publishing his findings and describing his methods, he very thoroughly tried them out in a large number of cases. His original article was published in 1914. His work has served to emphasize the advantage of the two-stage operation and the publication of his results has led to its very general use with a surprising lessening of post-operative complications and mortality.

While every man must determine his own detail of management and operative technic, I believe all should accept the clinical facts and significance of Pilcher's findings and in general, plan his treatment in accordance therewith.

He divides the clinical results of drainage and decompression into three stages.

First Stage. The patient presents the usual symptoms of retention. The bladder is drained, the back pressure on the kidneys is suddenly relieved, cloudy swelling and congestion of these organs promptly occurs.

Second Stage. There is no great change in patient's condition for three or four days, except the relief from the discomforts of a full bladder. On the fourth or fifth day, things begin to happen. The blood pressure falls, the amount of urine drops from perhaps 100 ounces to 15 or 20, the temperature and pulse rise, the tongue dries, hiccough is often present, the patient becomes restless or dull and apathetic. There is nausea. Albumen becomes present in large amount and functional efficiency of the kidney diminishes alarmingly. Soft distention of the abdomen is one of the earliest symptoms. Of course different cases react to a varying degree, but even the best risks show the reaction definitely.

If a simple opening of the bladder so changes the patient's condition for the worse, it is little wonder that so many cases died on the fourth or fifth day after the one-stage prostatectomy, which added the traumatism and loss of blood and lengthened anesthesia of major operation. Ether has a very bad. effect on a compressed kidney.

Third Stage. In a longer or shorter time, these symptoms ameliorate. The blood pressure rises to 160 or 170, the urinary output to 50 or 70 ounces. Albumen diminishes to a trace, the tongue cleans, the eye grows bright, the appetite returns and the patient begins to take an active interest in things and people. Coincidentally the kidney function approaches the normal as determined by the pheno-thalin test.

The changed condition is often very remarkable and must be seen to be fully appreciated. The time of its coming varies greatly. In my own cases, it has occurred anywhere from a few days to many weeks. In some, it never comes. The second stage of the operation should never be undertaken unless it has come. Its advent is an infallible indication that the procedure may be safely completed, for it means that the man and his kidneys have found themselves and there will be no repetition of the alarming symptoms.

The recognition of the coming of this happy change devolves upon the surgeon and he must judge each case on its merits. The efficiency of the kidney is of first importance but the general clinical state of the patient is hardly less so. Broadly speaking, it is safe to go ahead when he secretes from 70 to 100 ounces of urine of good specific gravity, eats and sleeps well, speaks with a strong voice and shakes your hand with vigor. In a word, when it seems apparent that a goodly degree of his normal "punch" has returned, then and not till then, should he be relieved of his offending gland.

In conformity with the above considerations, the management of the average prostatic should be essentially as follows:

The opening of the bladder supra-pubically (under local anesthesia or gas), the exploration of the bladder and the tying in of a Pezzer catheter for continuous drainage. The opportunity thus given for exploration of the bladder is most valuable and does away with the necessity for the use of less accurate means of diagnosing possible complications, such as x-ray examinations for stone and cystoscopic examinations for new growths and the determination of the condition of the prostate.

If calculi be present, they are at once removed. If new growths or diverticula be found, they can be dealt with then, or left until second stage of the operation. The shape, size and type of prostate can be determined by sight and touch.

The cystotomy wound instantly gives us accurate knowledge that otherwise could be obtained if at all, only by more elaborate methods. Coincidentally and primarily, it is the first step in the necessary treatment and relief of the patient. Experience teaches that the Pezzer catheter can be sutured into the bladder so that it will not leak and that it may be worn for weeks at a time without changing. It does not cause irritation and when removed will be found absolutely free from phosphatic crusts or other gross contamination.

It is seldom necessary to irrigate the bladder. during the indwelling of the catheter, except to clear it of blood clots during the first few hours. Personally, I believe that continuous drainage rather than washing with chemical solution, is the best means of cleaning up a dirty bladder. The patient is kept in bed 24 hours after the cystotomy, urged to drink tap water freely and given full doses of hexamethylenamin. Next day, if he is able he is gotten out of bed and usually kept up more or less until the symptoms of the second stage on the fourth or fifth day knock him out. The treatment of this stage is symptomatic and is largely aimed at supporting the patient and stimulating his kidney to action by forcing fluids by mouth, rectum and, if need be, intravenously. When he cheers up and reaches the condition of operative safety, he is anesthetized, the Pezzer catheter pulled out of his bladder, the lower stitch in his supra-pubic wound removed and the index finger wormed into the bladder by following the catheter fistula. This is easily done and the prostate removed in the usual way. This removal may be easy or difficult. Broadly speaking, the larger the prostate, the easier and the less bloody the operation. The small fibrous glands are not easily negotiated and I know of no surgical procedure that can prove more tiring and difficult.

Hemorrhage is sometimes slight; at others, free. It should always be controlled before the patient leaves the table, as it is in every way undesirable for these old men to be put to bed bleeding. The simplest way of control is by the Hagner bag. Gentle traction on the stem of this bag will practically always prove effective unless the bladder has been unnecessarily mutilated. The tendency to excessive bleeding is much lessened by the two-stage operation.

The difference in the amount of congestion in and around the gland at the first and second operation, is most striking. This improvement is not the least of the advantages of the method. The prostate removed and the Hagner bag in place and inflated, a large rubber tube is introduced into bladder wound and held in place by a stitch through the skin. This gives free exit to urine and blood clots. Tube and Hagner bag are removed next day and a Pezzer catheter introduced through wound from which the large tube came. This catheter is usually removed in about five days and the patient soon begins to urinate normally, although it is at best two to four weeks before the suprapubic sinus closes for good.

Irrigations are seldom used during the convalescence. A sound is never passed. The patients are strangely free from complications or discomfort after the second stage and I have never seen a repetition of the alarming symptoms which follow the first. They require little treatment aside from good nursing. They are gotten up on the second or third day and encouraged to get about and go to the toilet as early as possible. Most of them regain urinary control promptly. A few develop orchitis or epididymitis.

The rejuvenation which follows successful prostatectomy is truly remarkable, and there are no more grateful patients than these old men who have been thus made over.

The results obtained by the above outlined treatment are so vastly better than by other methods, that it is hard to believe that one is dealing with the same type of risk. In several clinics, the death rate is now only 5%.

When we consider the age of the patients, it will be seen that few major surgical conditions are now better managed or give a lower mortality. This showing should give the surgeon courage and enthusiasm and bring to the medical man such confidence as shall induce him to advise early operation and thus avoid those distressing complications which are peculiar to the neglected cases.

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THE RADICAL CURE OF HERNIA UNDER LOCAL ANESTHESIA: COMBINED WITH SCOPOLAMINE AND MORPHIA.

BY JOHN H. CUNNINGHAM, JR., M.D., BOSTON.

THAT local anesthesia is peculiarly suitable for the performance of a radical cure of inguinal hernia has been generally accepted; the use of scopolamine and morphia as a general hypnotic is less frequently employed with it, and in this community ether still seems to be the anesthetic of choice.

During the past six years the writer has used combined local and scopolamine-morphia anesthetic in over five hundred cases of inguinal hernia, and has come to regard it as the method of choice. Properly performed local anesthesia allows the same technical steps of the operation to be carried out as when a general anesthetic is employed, and the combined use of scopolamine and morphia eliminates all consciousness during the performance of the operation, which is always preferable, both from the viewpoint of the patient and the operator. Those that have used local anesthesia in the performance of inguinal hernia will agree, I believe, that the infiltration of the tissues beneath the fascia of the external oblique muscle simplifies the technical steps of the operation, especially in finding the sac. Moreover, following the completion of the operation the united tissues are not subjected to the strain which must accompany vomiting, when it occurs after ether anesthesia, or the cough sometimes resulting from ether inhalation. By administering scopolamine and morphia the patient loses consciousness, while in bed, in a most pleasant manner, and the apprehension of taking the anesthetic, or going to the etherizing or operating room is eliminated, which is no small matter to the average patient.

The use of this combined method of anesthesia has permitted the removal of the appendix in over 80% of the cases of right inguinal hernia, and the operation of gastroenterostomy, gastrostomy, cholecystostomy, cholecystectomy, appendectomy, suprapubic and perineal prostatectomy, internal and external urethrotomy, hemorrhoids, and fistulae, goitre, umbilical and ventral herniae, and amputations have been successfully carried out in patients who, for one reason or another, were not considered suitable subjects for general anesthetic. Two patients, subjected to thigh amputation for arteriosclerotic gangrene, had no local anesthesia, except to the nerve trunk, and it is the writer's belief that by employing scopolamine and morphia all local operations may be performed with a much smaller amount of the local anesthetic. While no untoward symptoms have occurred in the writer's cases, other than a mild muttering delirium in some, lasting for several hours, scopolamine and morphia in too large doses is said to have a somewhat depressing action on respiration. The bad results from the use of scopolamine and morphia have been the depressant influence on respiration, occasionally to the point of asphyxiation. When it has occurred it must be due to a rare idiosyncrasy of the patient or to enormous doses of the drug, as the writer has employed it in over six hundred cases without encountering it. Physiologically, scopolamine acts on the cerebrum, inducing sleep. It has a depressant action on the spinal cord, but is not an analgesic. The pulse rate is lowered and respiration somewhat depressed. The pupils are dilated; the skin becomes moist, and the throat and mouth dry. The effect of the combination of scopolamine and morphia lasts 6-8 hours and has the advantage of not requiring post-operative injection of morphia, as so frequently occurs following ether anesthesia, and the patient has no ill effects in the post-operative recovery.

The technic as we have employed it, in the performance of inguinal hernia and other operations, is as follows: Two hours prior to the operation, from 1/120 scopolamine and 1/6 morphia; to 1/250 scopolamine and 1/8 morphia, according to the physical condition of the patient, is administered. One hour later the memory is tested by simple questioning and the suitable dose for the next administration judged, and increased or decreased over the first dose, as conditions indicate. In the average adult a second dose of 1/120 scopolamine and 1/6 morphia will be required, as little or no effect may be expected from the first dose. About one hour later, just before taking the patient to the operating room, the memory is again tested, and if absent no more drugs are given. This state of the patient is the most common. Less commonly, however, more of the hypnotic drug will be required. When this is so, scopolamine 1/200 or 1/250, but without morphia, is given. After the patient arrives in the operating room, quiet should be observed, and if the light is bright a towel should be placed over the eyes. The legs and arms should be confined as for any local operation, to prevent voluntary and involuntary motions.

The solutions employed for the local anesthesia have been novocaine, 1/4 to 1 per cent., while 5 drops adrenalin to the ounce; Apothesine, 1 per cent.; quinine and urea, and when none of these solutions could be obtained, cocaine, 1/4 of 1 per cent. When novocain was obtainable it has been the solution of choice, but Apothesine has proven quite as satisfactory. Quinine and urea seems the least valuable, and cocaine is to be avoided if possible.

The skin infiltration should be carried out with an ordinary subcutaneous syringe fitted with a fine needle, and the infiltration should be made to extend from one inch above the point of the internal ring to a point overlying the spine of the pubis. Infiltration of the subcutaneous tissue may be carried out with a larger syringe and needle, and a liberal amount of the fluid used (about 1/3 oz.). Three minutes' time should be allowed to elapse before the incision is made, and none but sharp-cutting instruments should be used, to avoid pressure. After the skin and subcutaneous fat have been divided, the superficial vessels snapped, and the fascia of the external oblique exposed, the solution should be injected beneath the fascia throughout the length of the inguinal canal, and allowed to remain three minutes before the fascia is divided. The injection thus being made results in a block of the three nerves concerned,—the ilio-hypogastric, ilio-inguinal, and genitocrural,—before exposing them. The two former nerves cross just above the internal ring, lie on the internal oblique muscle and are directly beneath the fascia, while the genito-crural passes along beneath the spermatic cord. By injecting about 1/3 ounce of the fluid beneath the unopened fascia of the external oblique the fluid is pressed into the surrounding tissues, so as to reach the conjoined tendon and Poupart's ligament and usually produces a complete block in the ilio-hypogastric and ilio-inguinal nerves, and possibly the genito-crural. After allowing the injected fluid to remain beneath the fascia for three minutes, it is divided, without cutting the fibers, the full length of the canal, taking care to open the external ring at its inner arch, so that a generous external flap of fascia will result. If the nerves are properly blocked the fascia may be freed inward to the conjoined tendon and outward to Poupart's ligament by blunt dissection. As the fascia is lifted, the ilio-hypogastric nerve is seen running inward and the ilio-inguinal running downward in the canal; and if the block is not satisfactory, the nerves may be infiltrated directly. This, however, is seldom necessary. The edematous tissue in front of the sac is easily separated, the sac isolated, opened, freed of any content, and then twisted so that it is puckered well under the internal oblique muscle, which is lifted so as to allow the sac to be transfixed and cut off beneath the muscle. The stump of the sac is fixed high under the muscle by a needle on each of the two ends of the suture transfixing the sac stump, and passing them through the muscle and fascia above the point where the fascia has been divided. The suture is tied, thus drawing the peritoneum as high above the internal ring as is possible. The cord is then lifted from its bed, and if the genito-crural nerve has been blocked, no pain will result; but if the block is not complete, the cord should be infiltrated as high as possible with a fine needle, care being taken not to penetrate the spermatic vessels. The cord being freed, it is held to the inner side of the field by snapping the upper and lower ends of the inner edge of the divided fascia of the external oblique muscle. By lifting the fascia by these snaps, the cord is held out of the field and the conjoined tendon becomes visible. A kangaroo tendon suture is passed through the conjoined tendon and Poupart's ligament, and tied, so as to make a new internal ring of proper size around the cord as it passes into the pelvis. The conjoined tendon and Poupart's ligament are united by a running kangaroo suture without tension, and burying the ilio-inguinal nerve below the union; care being taken at the lower part of the union to make the approximation close to the spine of the pubis. The external edge of the divided fascia of the external oblique is drawn under the inner layer and united to the conjoined tendon by catgut, and the internal layer is then united to the external surface of the outer layer by a running suture of catgut, thus making the new floor of the canal to consist of the union of the conjoined tendon and Poupart's ligament and two layers of the fascia of the external oblique muscle. The cord then lies in the fat of the deep layer of the superficial fascia. If the external oblique fascia is opened above the point at which the cord dips into the pelvis, it is closed by a catgut suture. The cord is covered by a running catgut suture uniting the cut edges of the superficial layers of the superficial fascia. The external wound is closed by a single subcuticular silkworm gut suture.

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Book Reviews.

Military Surgery. By DUNLAP PEARCE PENHALLOW, S.B., M.D. London: Henry Frowde, Oxford University Press. 1918.

The first edition of "Military Surgery" has been favorably reviewed by the JOURNAL. This second edition merits only further commendation. The evolution of methods in the treatment of war wounds has been so rapid that ideas and theories must be readjusted constantly because of the development of more efficacious methods. This edition contains a description of the Carrel method of treating infected wounds, a technic which is one of the most important advances in modern surgery. The chapter on "Treatment" has been entirely revised according to the most up-to-date material available. New illustrations have been added throughout the book, especially in the chapter on the treatment of fractures, which has been somewhat enlarged and revised.

Emergencies of a General Practice. By NATHAN CLARK MORSE, A.B., M.D., F.A.C.S. St. Louis: C. V. Mosby Company. 1918.

This volume, "Emergencies of General Practice," with 251 illustrations, merits high commendation. It deals with the common, unheralded accidents and emergencies which confront the practitioner at the time when least expected. The author records some of the observations and practical experiences resulting from forty years in emergency practice. Reference is also made to certain pathologic conditions, such as appendicitis, tubal rupture, and acute pancreatitis, which may be considered emergency cases, though distinctly surgical. The removal of foreign bodies, asphyxiation, fractures and dislocations, amputations, obstetric emergencies, and poisoning are among the topics considered. The general practitioner should be familiar with the clinical symptoms of these conditions in order to be able to act with rapidity and good judgment.

The Method of Enzyme Action. By JAMES BEATTY, M.A., M.D., D.P.H. London: J. and A. Churchill. 1917.

This volume, with an introduction by Professor E. H. Starling, M.D., Sc.D., F.R.S., brings together the chief results of modern research on enzyme and catalytic actions, and presents an hypothesis of ferment action. The author explains the mobilization of life's forces,—air and water. He shows that the control of the rate and the sphere of reaction is necessary for the evolution of living things. The two qualities of enzymes are explained: (1) the power, common to all ferments, of attracting the H or OH groups in water; (2) the power, specific to the ferment in question, of adsorbing some particular substrate. The hypothesis of enzyme action is based on the possibility of combination between molecules and the hypothesis that this molecular combination loosens the internal bonds in one or both of the combining molecules. The importance of the study of the composition and method of action of enzymes is considerable, because a sufficient insight would enable the physician to discover the cause of any fault in metabolism and to rectify it by such a simple method as the injection of a simple electrolyte or non-electrolyte into the general circulation or into the part affected. The author believes that it may be possible to manufacture some of the enzymes, a step which would lead the biologist nearer to his goal,—the synthesis of life itself.

The Treatment of Cavernous and Plexiform Angiomata by the Injection of Boiling Water (Wyeth Method). By FRANCIS REDER, M.D., F.A.C.S. St. Louis: C. V. Mosby Company. 1918.

This monograph deals with the treatment of vascular tumors by the injection of boiling water. Many of these tumors are inoperable, or, when operated upon, leave disfiguring scars. The Wyeth method has obtained most satisfactory results; of 104 cases subjected to this method, the author has no failures to record. The injection of boiling water is not entirely free from danger, for embolism or meningeal trouble may possibly result, but of all procedures, this is undoubtedly the safest. In this book, the technic of the method is explained and the details and illustrations of numerous cases are given.

Cancer: Its Nature, Causes, Diagnosis and Treatment. By ROBERT H. GREENE, A.M., M.D., F.A.C.S. New York: James T. Dougherty. 1918.

This volume deals with cancer from the point of view of a surgeon and a physiological chemist working together. Methods of diagnosis, and the principles and details of treatment are presented. In Part I, the intrinsic causes of cancer are discussed, according to the theories of Cohnheim and Ribbert and the parasitic theory. In considering heredity in connection with malignant growth, the author expresses the belief that although there are as yet no conclusive data to confirm it, there exists a hereditary tendency to cancer transmission. Part II deals with the nature of cancer and precancerous conditions. Part III is devoted to the diagnosis of cancer. Methods of sulphuric findings in the blood and urine are described in detail. The value of diagnosis by chemical and bacteriological means, and by x-ray and cystoscope are considered. In Part IV is expounded the view that the basis of all successful treatment is to be found in measures which tend to increase tissue metamorphosis. The uses of such agents as vanadium and arsenic, iron and manganese, condurango, and other bitter tonics are explained. In the matter of excision, the author believes that "no operation will cure cancer," although it will often retard active development; the greatest mistakes are often made in the after-constitutional treatment of patients. The effects upon the organism of selenium and tellurium are discussed. Preparations for cleansing, deodorizing, and disinfecting cancerous lesions of the skin are given.

Minor Maladies and Their Treatment. By LEONARD WILLIAMS, M.D. Fourth Edition. New York: William Wood and Company. 1918.

The fourth edition of "Minor Maladies and Their Treatment" exhibits changes consistent with the author's progressive attitude toward medical science. Prevention, rather than cure, is the aim of modern investigation. This book presents the importance of studying the field of the internal secretions, the endocrine glands, in forestalling many serious diseases. The causes of colds, coughs, and sore throats—namely, irritation and microbic invasion—the methods of avoiding them are explained. The condition of pretuberculosis is discussed. A chapter devoted to indigestion considers those forms of dyspepsia which are not of organic origin; gastric digestion is considered in the light of the researches of Pawlow and others. Remedies for constipation, diarrhea, vomiting, and giddiness are suggested. Other topics discussed include rheumatism, neuralgia, headache, goutiness, old age, insanity, drugs, and general health. Minor glandular insufficiencies are mentioned, with reference particularly to thyroid medication. This volume is of unusual practical value because it deals with the matters about which a physician is most frequently consulted.

A Text-Book on Gonorrhea and Its Complications. By DR. GEORGES LUYS, Late Assistant to the Urological Clinique, Hôpital Lariboisière, Paris, Priseman of the Faculté de Médecine, Paris, Chief Medical Officer of the Urological Center at the Military Hospital, Versailles. Translated and Edited by ARTHUR FOERSTER, Capt. R.A.M.C. (T.C.), M.R.C.S., L.R.C.P (Lond.), Late Resident Medical Officer, London Lock Hospital. Second Revised Edition, with 201 illustrations and 3 colored plates. New York: William Wood and Company. 1917.

The first edition of this book was reviewed in these pages about four years ago. The present edition, published after that interval of time, is essentially the same book as its predecessor, and has evidently been published more because its previous edition had been exhausted than for any radical changes or additions made necessary to bring the book up to date. With a few minor additions then, the book remains the same, and is, as was the first edition, one of the best practical text-books on gonorrhea in the English language.

The Diagnosis and Treatment of Venereal Diseases in General Practice. By L. W. HARRISON, D.S.O., Lieut.-Colonel, R.A.M.C.; Lecturer on Venereal Diseases and Officer in Charge, Military Hospital, Rochester Row. London: Henry Frowde, Oxford University Press; Hodder and Stoughton, Warwick Square, E. C. 1918.

This is a practical and in some ways, an unusual book. In about 450 pages, Colonel Harrison has managed to consider the several venereal diseases, both as to their general characteristics, and as they manifest themselves in the different parts of the body. He has also found space to discuss various special, and always practical, matters pertaining to the diagnosis and the treatment of these diseases. There are, for instance, chapters on "The Equipment Required for Diagnosis and Treatment," "The Taking of Specimens for Laboratory Examination," "The Interpretation of Laboratory Required for Diagnosis and Treatment," "The manifestations of these diseases in women and children.

The book comes to us from the pen of a clinician and surgeon in charge of a British Military Hospital. It is essentially a practical book, and one which will prove of great value to those who have to fight venereal diseases in these times, when they not only "provide a field for scientific research which is of surpassing interest, but they levy a toll on our national resources which cannot be ignored" (author's preface). The book is well printed, and fully illustrated with both photographs and excellent colored prints.

Dream Psychology. By MAURICE NICHOLL, M.B., Capt. R.A.M.C. Henry Frowde, and Hodder Stoughton. 12mo. pp. 188. London: Oxford University Press. 1917.

The theories of Freud as to the significance of dreams as the expression of an unfulfilled or repressed wish are well known. Jung has also taken up the study of dreams, and has reached very different conclusions. In this book the writer sets forth the theories of Jung in a very convincing way. Undoubtedly, dreams often arise from the unconscious, and frequently much information about the dreamer's interests and conflicts can be obtained from their study. While Jung admits that the manifest content of dreams is composed of symbols, he rejects Freud's narrow and fixed symbolism, and this is dependent upon a fundamental difference in theory, in that he denies the view that the unconscious is chiefly the storehouse of repressed ideas and wishes, the matter of which is chiefly, or entirely, sexual in origin, and, therefore, he finds unnecessary Freud's fantastic theory of an opposing factor in consciousness, which he calls the moral censor. The author gives an excellent illustration of this difference, not in a dream, but in the mental state of an author seeking to give expression to a feeling in himself by a single word, and the subsequent feeling of relief, after many unsuccessful attempts, when the suitable word is suddenly found. The feeling of displeasure during the search arises not from repression, but from non-expression, not as Freud would explain it, from a barrier connected with repressed sexuality.

The application of this theory of opposition to expression of interest, showing itself in dreams and in many forms of psychoneuroses, is clear and very apt, and a study of this book by physicians cannot but be found helpful and useful.

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SOME OBSERVATIONS ON THE PERSONALITY OF FEEBLE-MINDED CHILDREN IN THE GENERAL POPULATION.

THE United States Public Health Service has recently published as Reprint Number 467, from the Public Health Reports, an interesting article dealing with "Some observations on the personality of feeble-minded children in the general population," by Walter L. Treadway.

In studies of school children with reference to mental development, the investigations made by the Public Health Service emphasize the necessity of making careful studies of those children who grade below the normal limits as to intelligence. Children in this group show greater differences in make-up or personality than children in the normal group. It is not sufficient to grade the children in any school by formal psychological tests.

In making studies of the mental development of any group of children the formal psychological tests may be relied upon to grade the intelligence. But those children who grade below certain normal limits or who by their conduct show unusual traits of character should be studied more carefully by one having psychiatric training.

Investigations conducted by the Public Health Service have afforded the opportunity to grade, by the Binet-Simon scale, the intelligence of a large number of rural American school children, white and colored, and of some immigrant children. The results showed a considerable variation in the degree of intelligence among mentally normal children.

Binet and Simon, in discussing the psychology of the feeble-minded child, claim that he does not resemble a normal child whose mental development is simply retarded. In the case of the former, the retardation has not been uniform, showing as an end-result a greater development of intelligence in some respects than in others. Binet and Simon, therefore, conclude that the mental equipment of the feeble-minded lacks equilibrium or proper balance. They also state that feeble-minded children who are assumed to resemble, by reason of retarded intellect, much younger normal children, show defects of reasoning, understanding, and imagination which do not appear in the latter. These authors are of the opinion that the mental characteristics of the feeble-minded child show individual peculiarities of a pathologic kind.

It is necessary to turn to psychiatry for a guide to the understanding of collective reactions as observed, either habitually or episodically. By means of psychiatric approach, the differences of personality as recognized in the feeble-minded children may be better understood. To illustrate the plan for psychiatric study and the tentative classification of feeble-minded children, the author discusses five types, and a few case histories obtained in the course of surveys of the Public Health Service are presented.

The first of these is the type which shows "shut-in" tendencies. This class is reticent and seclusive, and often sensitive, stubborn and hard to influence. Another type of individual may show manic-depressive reactions, originating in mood disturbances. This type shows emotional variability and fluctuations in capacity and efficiency sufficiently marked to attract attention. A third type resembles those showing the manic-depressive reaction. These people have considerable difficulty in adapting themselves to conventional standards.

The next type of personality observed to interfere with proper adaptation to environment has been called the "epileptic temperament." In this character, two qualities dominate,—egotism and an inclination to piety. These people find it difficult to adjust themselves to discipline. Frequently representatives of this group are prone to be cruel. Still another type of reaction occurs in persons possessing an exceptionally retarded intellect. These individuals show a fatuous temperament. They are self-complacent, silly, stupid, and often develop psychoneurotic reactions.

From this study the following conclusions are drawn:

1. In addition to certain formal psychological tests the children who grade below certain normal limits, or who show certain unusual traits of character, should be studied by psychiatric methods.

2. Certain constitutional traits occur with sufficient frequency in the mental defectives to warrant their being recognized as types for future study. The following tentative classification is suggested: (*a*) those with shut-in tendencies; (*b*) those with manic-depressive-like reactions; (*c*) those allied to the manic-depressive group; (*d*) those who show the egotistic and epileptic temperament; and (*e*) those who show a fatuous temperament.

3. Constitutional traits must be taken into account when making a diagnosis of mental deficiency, or feeble-mindedness, as it is more often termed. Future studies in the field may show that they are of practical value in differentiating the mentally defective child from one merely retarded.

4. A knowledge of psychiatry is an important requisite in the diagnosis of feeble-mindedness. This becomes of more importance when it is realized that a close relationship exists between psychic disorders usually regarded as insanity and the higher types of mental deficiency or feeble-mindedness.

5. The recognition of these constitutional traits will permit a better understanding of impure or atypical cases in mental medicine and, furthermore, offer a means of recognizing antisocial traits in the mental defective before society has paid the penalty of their inherent antisocial tendencies.

6. The understanding of these traits permits, early in the career of the feeble-minded, the inauguration of prophylaxis which may serve to prevent much sorrow and disgrace to their immediate families; first, by segregating certain types in institutions early in life, regardless of the financial status of the family, and second, by replacing through early training vicious tendencies which the feeble-minded child easily adopts and which are not readily overcome when once developed.

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HOW INDUSTRIAL FATIGUE MAY BE REDUCED.

THE United States Public Health Report issued for August 16, 1918, contains an important article dealing with the problem of industrial fatigue. Investigations have been made in factories that are manufacturing war supplies, for the purpose of determining whether unnecessary fatigue is present and discovering the conditions under which a maximum continuous output may be obtained.

In the present emergency caused by the war it is desirable to understand all practicable ways by which industrial work may be made more efficient and output may be increased to a maximum without resorting to unwise or burdensome demands on labor. It is often possible to increase output temporarily by increasing the work of the employee, but if he is overworked his output soon falls off; hence such a method, if carried far, quickly defeats itself and in the long run is not profitable. Given adequate equipment, adequate administration of the plant, and a proper spirit among the employees, fatigue is the greatest single obstacle to a maximum output. Fatigue diminishes output not only directly, but indirectly, by increasing accidents and the proportion of spoiled work and by causing sickness and absences of employees. It will, therefore, be profitable to employers, to employees, and to the Nation, to inquire into the ways by which fatigue may be reduced.

A certain amount of fatigue is the normal result of bodily activity and is harmless. Over-fatigue may be caused by the conditions of work inside the factories or by the habits and conditions of living of the workers outside the factories. Fatigue may be detected by various tests, such as keeping a record of the output of the individual employee, by observing the amount of electrical or other power consumed, and by noticing the amount of spoiled work and the number of accidents. There are, also, various laboratory tests dealing with muscles, the nervous system, sight, hearing, and certain chemical changes within the body, which aid in determining fatigue.

In dealing with the problem of reducing fatigue caused by work inside factories, there are several measures which may be adopted with advantage both to the worker and to the output. Rest periods are necessary, obligatory, and not discretionary on the part of the workers. A little food or a cup of tea or cocoa taken at such a time is often remarkably restorative. Introducing variety into industrial work is another means of diminishing fatigue. Adjusting the speed of machines to an average pace, omitting unnecessary motions, and providing adjustable seats, all tend to procuring least possible waste of energy and time.

The ventilation of workrooms is an important aid to efficiency and should conform to the principles of ventilation now accepted. The recent investigation of ventilation has demonstrated that excessive heat and humidity should be avoided so far as possible, and that air should be kept in motion. When the worker is in a hot room, and especially when heat and humidity are combined, his bodily temperature rises, often several degrees, and he is put into a feverish state. While movement of the air will not cool the air, it will cool the skin and hence will keep down the bodily temperature to the healthful level. If possible, windows should be wide open; but where this is not possible and wherever, even with open windows, the heat of the workrooms rises above 68°, forced drafts or electric fans should be used to keep the air in motion. It is astonishing how easily a comfortable and refreshing bodily condition may be maintained by the use of electric fans. Air currents should not, however, be too strong. Bodily discomfort is caused by excessive drafts, and a gentle movement of air is the most effective. Uniformity in the play of air on the skin is undesirable; an oscillating electric fan or a frequent change in the rate of forced drafts gives the best results.

Certain general sanitary conditions, such as adequate lighting, an exhaust system to remove fumes and dust, abundant drinking water, attractive, quiet rest rooms, lunch rooms, and washing facilities are also important in increasing efficiency.

The industrial urgencies of the war have caused many factories to run both day and night. Man is not naturally a nocturnal animal, and night work must always be regarded as inadvisable on physiological grounds. Lack of sleep produces fatigue, and the sleep of night workers is likely to be curtailed. Where night work is unavoidable, fatigue can, to some extent, be lessened by allowing the workers to alternate at intervals between day and night, the periods to be not less than one month in duration.

In regard to the number of hours of labor, evidence favors a reasonably short working day, even in the interests of the industries themselves. Overtime and Sunday work should be avoided.

Fatigue resulting from the work inside the plant will appear sooner and be a more serious hindrance to output if the worker is not in a sound condition of body and mind when he comes to his task. Anything which an employer can do outside the plant to promote bodily health and vigor and mental contentment is in the long run profitable. It aids in securing a higher class of workers, greater loyalty to the company, a lessened labor turnover, greater skill, and greater general efficiency. Modern housing, attractive home surroundings, opportunities for healthful recreation, club facilities—whatever will keep workers away from the saloons and other places deleterious to health—are all safeguards against industrial fatigue.

MEDICAL NOTES.

INFLUENZA IN SWITZERLAND. An epidemic of influenza, or "grippe espagnole," has been widely prevalent in Switzerland during the past two months. At the beginning of July the severity of the attacks suddenly increased, and fatal cases are being recorded daily in many cantons, especially Berne, Basle, Lucerne and Zurich. In Berne the civilian population has been attacked to one-fifth or more of its total number. At Chateau d'Oex 6 out of 250 English internes are reported to have succumbed to it, and among Swiss soldiers the official bulletin recorded 11,000 cases with 305 deaths down to July 15th. The American Red Cross has voted a sum of $100,000 to provide better accommodation for sick soldiers, a large hotel at Interlaken having been secured for convalescents. The symptoms are those generally associated with influenza, but of a severe type, pneumonia being a common complication. In canton Vaud notification has been made compulsory, meetings are forbidden, and no visits allowed to patients in hospital. The medical profession has not escaped, and a certain number of fatal cases are reported, among them Dr. Steiger, first assistant to Professor Eichhorst in the cantonal hospital at Zurich.

PESTILENCE SWEEPS NORTHERN RUSSIA.—Famine, typhus, and cholera are raging in the northern provinces of Russia. The population of entire villages are dying in great numbers. In some places, each person receives only two pounds of oats weekly and no bread. Railway connections between Moscow and the rest of Russia, except the provinces of Tver and Tula, have ceased entirely.

SEALE HAYNE NEUROLOGICAL STUDIES.—The first number of the Seale Hayne Neurological Studies is about to be published by Mr. Humphrey Milford, Oxford University Press, and that will be followed by issues every two months. The editor is Major Arthur F. Hurst, M.D., F.R.C.P., officer-in-charge of the Seale Hayne Military Hospital, Newton Abbot, assisted by Capt. J. L. M. Symns, Capt. W. R. Reynell, and Lieut. S. H. Wilkinson. The forthcoming part contains six studies on hysteria, and articles on the rapid cure of hysterical symptoms in soldiers, and on war contractures.

WAR NOTES.

RED CROSS TO HELP IN MANCHURIA.—Four American Red Cross doctors have gone to the Manchurian front to investigate refugee and civilian relief conditions. They will establish an evacuation hospital near the front. The surgical department of the Harbin military hospital has been taken over by the Red Cross unit. This building has been occupied and Surgeon Logan placed in charge, with seventy wounded Czechs as patients. This hospital will be equipped as a base hospital containing 300 or 400 beds. The Russian hospital in Vladivostock is in full operation.

EMERGENCY HOSPITAL.—The location of the emergency hospital on Commonwealth Avenue, in the Commonwealth Armory, has been pronounced by Secretary Baker as unfit for use by the War Department as a convalescing station for wounded soldiers. In reply to Governor McCall's offer of this building, Secretary Baker is reported to have written the following letter:

"Please let me thank you most heartily, and through you, the people of Massachusetts, for your very kind offer of the Emergency Hospital for the use of the medical department.

"Fortunately, just at the moment, the medical department seems to be rather well provided for in Boston, and it has already arranged for the use of the Peter Bent Brigham Hospital, and, as you know, the Elks are building a hospital of considerable size adjoining the Robert B. Brigham, and it is believed that these two hospitals, administered as one, will take care of the needs of the present. It is quite probable that at some time in the future it may be necessary to have other hospitals in the vicinity of Boston, but even then the Emergency Hospital will hardly meet the requirements, because such a hospital should be located where the patients can have plenty of fresh air and sunshine and the privileges of out-of-door recreation. In other words, the hospital should be located out of the city.

"However, your offer, I want you to understand, is very highly appreciated.

REST ROOM FOR NURSES.—To give Army and Navy nurses a comfortable place for their hours off duty, the American Red Cross will provide special recreation houses at all large base hospitals, to cost about $350,000. Contracts have been let for forty, several of which are completed, and some more are under contract. The building, similar in architecture to the convalescent houses for soldiers, though smaller, provides a large and comfortable lounging room, attractively furnished, and a dining room, kitchen and laundry. The large room will be supplied with easy chairs and couches, tables, writing desks, piano or phonograph and special library. A complete equipment of dishes, linen, sewing machines and utensils will be available in the service end of the house. The nurses may prepare special dishes or serve meals for themselves and their friends or make or launder garments when necessary.

These houses were provided as soon as it was learned that the nurses had no attractive rest rooms and were obliged either to stay in their bedrooms or to sit in a narrow, corridor-like space set aside for them. In some camps, the Red Cross not only has provided these houses, but has secured cottages in the mountains or at the seashore where nurses especially in need of rest can go for a recuperative week end. The nurses keep house for themselves. At hospitals inaccessible by trolley, the Camp Service people put Red Cross cars at the disposal of nurses who wish to get away for an hour or two from scenes of sickness. These plans are carried out with the approval of the military authorities who report that these recreational measures play an important part in keeping the nurses happy and efficient.

Army Health Excellent.—Health conditions among troops in the United States during the week ending August 16 continued excellent. The death rate was 2.71, a decrease from the previous week. Total deaths numbered 119.

Lowell Doctor Injured in London Air Raid.—Dr. John F. Daly of Lowell is recovering in London from wounds sustained in a house which was struck several months ago by a German bomb from an airplane. Dr. Daly received his medical degree from Tufts Medical School. He had been in the front ranks for some time before returning to London where he was injured.

War Relief Funds.—On August 26, the totals of the principal New England War Relief Funds reached the following amounts:

Belgian Fund	$686,724.49
French Orphanage Fund .	397,415.51
French Wounded Fund ..	394,169.25
Armenian-Syrian Fund ..	311,276.14
Italian Fund	198,073.10
LaFayette Fund	41,916.23
British Fund	14,488.63

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending August 24 the number of deaths reported was 193, against 194 last year, with a rate of 12.83 against 13.10 last year. There were 46 deaths under one year of age against 46 last year.

The number of cases of principal reportable diseases were: diphtheria, 28; whooping cough, 31, scarlet fever, 13; typhoid fever, 1; measles, 17; tuberculosis, 49.

Included in the above were the following cases of non-residents: diphtheria, 2; whooping cough, 1; scarlet fever, 1; measles, 1; tuberculosis, 6.

Total deaths from these diseases were: diphtheria, 3; whooping cough, 3; tuberculosis, 49.

Included in the above were the following non-residents: diphtheria, 1.

Miscellany.

DECLINING BIRTH RATE.

The significance of the declining birth rate as a menace to all civilized nations is discussed in a recent address by Louis J. Dublin, Vice-President of the American Association for Advancement of Science. The address begins:

"It is a custom of this section, I believe, for the retiring vice-president to select for his address a subject of national interest in the field of social economy. He is expected to avoid narrow and technical discussion of specialties, but he may properly summarize the important works of other investigators in specialized fields to show their trend and bearing, and he may also point out the direction which further research should take. These requirements of the occasion are all the more necessary now, in view of the circumstances under which we are living. We are going through a period of serious conflict. Our Nation is at present engaged in concentrating its resources of men, of materials, and, above all, of thought to make itself felt in the world struggle for preserving civilization. This is no time for trivialities or for small detail. Under these conditions the Section on Social and Economic Science of the American Association may be expected to have a message of national import. It would be almost common to take your time and attention for anything but a topic of the widest practical significance in the present national emergency.

With these considerations in mind, I have chosen as the subject of this address the significance of our declining birth rate. I have done so with considerable hesitancy, because of the difficulty of the subject and the importance of its present lesson. I shall count also on your forbearance, hoping that you will forgive the incompleteness and sketchy character of my argument. The study of American demography has convinced me that we are concerned with a problem of the greatest possible moment. Changes have been progressing in the internal structure of our population which have, for the most part, escaped attention and which, if allowed to continue, will result in very serious national embarrassment. Conditions of war bring into relief the necessity for a vigorous and efficient population. It is not too much to say that the present tendencies in our national and family life are such as seriously threaten the development of those groups in the population on which we must rely for vigor and efficiency in thought and action.

The declining birth rate has received but little scientific attention in the United States. It has been, however, the subject of very careful investigation in Europe. During the last 50 years the birth rate has declined in virtually every country of the civilized world. Some countries have been affected more than others, but the phenomenon has been observed in extreme form in one country, namely, France. France has made an experiment in birth control on a national scale. All the parts of that experiment, including the end-result, are now on view and available for scientific observation and comment. Before the present war, France had already reached a point where her birth rate had decreased to a point below her death rate; her population was actually decreasing. But for 10 years before that time the approaching crisis had called for the careful attention of her best minds.

A commission on depopulation, composed of statesmen and sociologists, was appointed to study the problem, and a comprehensive report on the sources of depopulation was prepared. This report is too elaborate for detailed description here. I shall rather present the situation for France, as I understand it, in broad outline, bringing into relief only the main findings of the commission.

Let us consider the growth of population during the last century in the three leading countries of Western Europe, namely France, the United Kingdom, and the States composing the German Empire. At the beginning of the nineteenth century France was the leader of the three countries, with a population of about 29,000,000. The States which now compose the German Empire were second, with a population of about 23,000,000, and the United Kingdom stood third, with a population of about 18,000,000. A century later we find the situation totally changed. The German Empire headed the list with a population of nearly 65,000,000; the United Kingdom was second, with a population of 45,000,000; and France was third, with a population of only 39,000,000. In other words, while the population of the German Empire had nearly trebled and the United Kingdom had increased to two and one-half times its earlier numbers, the population of France had increased less than one-half. Further inspection of the figures show that a marked change in the rate of increase of the population of France occurred about the year 1860. At that time France was still in the lead and had already reached a population of 37,000,000. After that date it increased only 2,000,000, while Germany in the same period almost doubled in population. In 1811 the population of France constituted 16% of all Europe. One hundred years later the French population constituted only 9% of the total.

This situation for France may be accounted for principally in terms of its declining birth rate. Such figures as I have for France show that at about 1830 the rate was 30 births per 1000 of population. The last available figure for 1914 was 18 per 1000; the death rate was 19.6 per 1000. This was the first war year, but already in 1911 the death rate, 19.6, exceeded the birth rate, 18.7. The reduction of more than one-third in the birth rate during the 80 years was both gradual and continuous. On the other hand, the birth rates in the German Empire and in the United Kingdom continued high, over 30 per 1000 up to 1895 in the latter and up to 1909 in the former. Since then the birth rates have declined rapidly in both countries, but the enormous increase in population for both Germany and the United Kingdom was achieved before the changes in the birth rate began to make themselves seriously felt.

We are not concerned entirely with gross totals of population. Equally significant is the internal structure of population. As we shall see later, changes in the constitution of a population almost invariably appear with changes in the birth rate. This will become clearer by comparing the ages below which one-quarter, one-half, and three-quarters of the total populations of Germany, of England, and Wales, and of France, respectively, are found. Thus, one-quarter of the population of Germany is under age 11, one-quarter of the population of England and Wales is under 12 years of age, whereas one-quarter of the French population is under age 14 years. Again, one-half of the population of Germany is found under 23.5 years, one-half of the population of England and Wales is below 26 years, while one-half of the French population is below age 30. We find, finally, that three-quarters of the population of Germany is below age 41 years, of England and Wales is below 42 years, and of France is below 49 years. These figures show clearly that the average age of the French population is considerably higher than that of the other two countries. Its youth and its strength form a smaller part of its total population, while its old and its dependents form a much larger part. This, as we shall find, is an invariable consequence of a decreasing birth rate, which reduces the proportion of the young and thus brings into relief an undue proportion of the aged.

The declining national birth rate of France is also severely selective in character. The reduction of the birth rate has affected mostly those who are both economically and socially best fitted to bear and to raise a family to maturity. A careful classification by Bertillon of the number of children per 100 families in Paris shows that the very poor have the largest number and the very rich the smallest number of children. The order of size of the family is invariably the reverse of the order of economic condition. Since economic status is highly associated with efficiency and social worth, low birth rates in the best equipped groups of the population can have but one effect in the vital constitution of the next generation, namely, a decline in constructive effort for national development.

Evidence suggestive of such decline in national development is afforded by the fact that coincident with a rapidly declining birth rate France has had a high and rather stationary death rate during the last quarter of a century. England, through the development of its public-health service, reduced its death rate to under 14 per 1000 in the year before the war (1913), when France had a death rate of 4 per 1000 higher. In spite of the low French birth rate, the infant mortality rate has not been low and has been coupled with a high still-birth rate. The death rate from tuberculosis in France has recently come into public notice here because of war conditions, but it was high before the war."

Mr. Dublin then points out the indifference in France to the obligation of maintaining high standards of public health, as is shown by her unsatisfactory birth rates. In England, the last few years have shown a decline in birth rate, although it has been accompanied by a decline in death rate. In England, as in France, the birth rate is greater as the economic and social status is lower; this is due to the voluntary restriction of childbearing. A further disturbing element in the situation in England is the internal change in the population. Because of the decreasing birth rate, the average age of the population is rising, and the increased longevity of its constituents is not re-enforced from its youth, for the supply of infants diminishes relatively to the rest of the community.

In the United States, the situation is superficially a favorable one, for the total birth rate shows an increase of one per cent. annually. The difficulty with the American situation is that the native stock is playing an ever smaller part in the composition of the total population; the increase in our population is due to two factors: immigration and a high rate of increase in foreign born. Statistics show pronounced selection in the decline in native birth rate. The race stock which founded our institutions is no longer maintaining itself, and its place is gradually being taken by foreign elements. Additional evidence of the selective character of declining birth rate is presented by the study of families of college graduates and men of science. In order that the native population of the United States remain stationary, the average number of children per family must be nearly four. By the conscious limitation of births among families of the best blood of America, our national standards are being leveled to meet the lower quality of our population.

In suggesting a remedy for the situation, Mr. Dublin says in conclusion:

"The State is largely responsible for the present condition. The system of education which it has provided for the youth of the country has failed for the most part to inculcate national ideals. Our young people have grown up without a broad outlook on life. They have been taught to think in terms of personal convenience and advancement, and not in terms of the common good. Democratic education is a failure if it neglects to make provision for the character of its future citizenship. Our young men and women must be taught to realize early that we do not live for ourselves; that our intellectual, economic, and social advancement must be carried forward not only as tradition but more especially in terms of new, vigorous, and worthy personalities. Our educational system must make our various racial groups conscious of their best traditions and instill desires to see their better strains strengthened and increased as a foundation of the greater democracy of the future.

The education of our women is especially faulty in this regard. Our schools and colleges, with few exceptions, direct the thoughts and energies of our girls away from ideals of normal home life and center them upon personal refinement or upon personal ambition. It is no uncommon thing to find that girls have gone through their entire college course without a single occasion when the subject of their place in society as mothers and wives was given serious consideration. No wonder that our educated women think mainly of 'careers' or of pleasures offered by society as the aim of existence. These are all false gods which smother the natural and wholesome instincts which every species possess to insure its maintenance. The old virtues of womanhood need restatement today. Whatever else women learn in the schools they must be educated for their place as mothers, and democratic education must make efficient provision for this primary function.

The State is guilty of another sin. It has made no provision to reward, either substantially or with esteem, the women who, realizing their obligation to the State, are willing to bring up families of normal size. The bearing and rearing of children is costly, both in energy and in funds, and must act as a check on personal ambition and on the enjoyment of the freedom and pleasures of social life. A family of four children requires all the attention of the thoughtful and capable woman. Her success as a mother will be at the expense, in the majority of cases, of her achievement in other fields. It is not asking too much that such a woman should be favored with the admiration of the community in which she lives and not, as at present, with its commiseration and pity. The State may find it expedient, likewise, to encourage parenthood by considering the size of the family as a factor, among others, in fixing exemptions from taxes.

Individual selfishness is at bottom the source of the evil I have described. An increasing number of men and women do not assume the marital state or, when married, do not raise a family of children because they prefer to live better than their forbears and to spend more on themselves than would be possible if they had children to raise and educate. Under present conditions children are not an economic asset. Restrictive compulsory education and child-labor laws make children an expensive luxury which only the poor can afford. In fact, there is no very good reason, on the score of personal comfort alone, why individuals should assume the obligations and sacrifices which large families entail. Such, indeed, is the logical conclusion of our growing materialism.

Yet the shallowness of this attitude must be obvious. Men and women who today are rallying to the defense of the country in war-time need not be reminded that we live not for ourselves but rather for the fuller life of the community. If only the same spirit would animate us in times of peace, more would then meet their obligation to the state through parenthood. A new citizenship would then arise which would be worthy to receive the noble traditions from our past and to carry our civilization forward into the future. Our appeal must be made to the religious impulse in our individual lives. It will require all the religious power latent in our people to set us right. I do not mean the mandate of any particular religious sect, but rather the ethical force which arises within us when we realize clearly our relation to the community about us and the obligation which this relationship involves. The problem of the size of the family, like a whole host of other important social questions, will be solved only when men realize the holy purpose of life, that we are here to add to the sum total of the common good; in a word, that we must leave the world better than we have found it.

In conclusion, let me emphasize the need for birth release among the healthy and normal people of our country as a primary national duty. Such release must be conscious and deliberate, the act of will of free individuals who thus express a highly moral purpose."

Correspondence.

"KISSING"—A FUNCTION.

Lynn, Mass., Aug. 20, 1918.

Mr. Editor:—

On Saturday morning, August 17, 1918, there appeared on the front page of the *Boston Post* a very short paragraph in which the New York Board of Health gave gratuitous advice to the public on "kissing." The method they advocate, and which they say is prophylactic in Spanish influenza, is one which is not at all likely to appeal to the public because it substitutes a make-believe for the real thing. They advise "kissing through a handkerchief." They do not state the kind of handkerchief, the way it should be used and whether or not it could be used more than once. In giving advice to the public it is wise to be explicit and give definite directions which can easily be followed. These directions need not necessarily be accompanied by diagrams or practical demonstrations, but can be cited in language that anyone may read and understand.

Handkerchiefs are made of different material and different qualities of the same material—silk, linen, cotton, etc., and the porosity depends on the material and quality. The porosity can be estimated easily by a low power magnifying glass. Handkerchiefs are used for different purposes; the most important being a receptacle for nasal secretions. As a rule, one is in use but occasionally more than one is carried.

In order to estimate the value of the handkerchief as a prophylactic, it is necessary to consider the "Influenza Germ." Its average length is about 1/25000" and its average breadth 1/150000". These germs are so small that about 30 could pass sidewise, and about 180 directly, through any of the meshes of an ordinary handkerchief. Those germs which do not pass through will, in all likelihood, be entangled in the material. The handkerchief would then be returned to the pocket or pocketbook. The longevity of the germs being 24 to 48 hours, the handkerchief, if again used for the purpose above mentioned, would not be much of a prophylactic.

The "Influenza Germ" generally occupies the nasal cavities and naso-pharynx, and finds exit by these passages more readily than by the buccal cavity.

A handkerchief used as it is generally used, then applied as the New York Board of Health advises, would be a first-rate carrier instead of a prophylactic. If the New York Board of Health desires to advocate prophylaxis in this disease, why does it not adopt modern methods and advise osculation of the cheek instead of the lips? Most women and some men carry enough antiseptic face powder to kill any pathogenic germs emanating from the mouth.

The French fashion in this, as in other things, is good.

A. McRobbie.